—THE—

Therapeutic Gazette.

Whole Series, Vol. XIII. | DETROIT, MICH., PHILADELPHIA, PA., | April 15, 1889. | Third Series, Vol. V. No. 4.

CONTENTS.

Original Communications.

PAGE

Prophylactic Hygiene. By Professor Dujardin-Beaumetz..... 217
Chemical and Clinical Experimental Researches on the Salicylate of Mercury. By W. C. Caldwell, M.D..... 225
Brain Wounds, with Excessive Loss of Structure. By G. Archie Stockwell, M.D., F.Z.S..... 232
Change in the Color of the Hair, from the White of Old Age to Black, produced by Jaborandi. By D. W. Prentiss, A.M., M.D..... 238
Atropine as a Remedy for Shock. By Frank C. Bressler, M.D..... 239
Two Cases of Opium-Poisoning in Young Children: Recovery. By C. L. Dodge, M.D..... 241
Report of Cases in which Apomorphine was used. By T. Oliver Tait, M.D... 242

Leading Articles.

Chronic Arsenical Poisoning..... 244
Balsam of Copaiba..... 246
Inhalation of the Iodide of Mercury in Tuberculosis of the Lungs..... 246
Anemone Pulsatilla in the Treatment of Gonorrhœal Orchitis..... 246
Clinical Notes of Sulphonal..... 247

Reports on Therapeutic Progress.

Clinical Observations on Manzanillo..... 243
Nux Vomica in Cardiac Failure..... 243
Professor von Bergmann's Case of Cerebral Abscess..... 248

PAGE

The Curative Treatment of Cystitis in Women..... 249
A New Study of Lobar Pneumonia, with Deductions from an Analysis of Fifty-six Fatal Cases..... 250
Nerve-Grafting..... 252
The Poisonous Action of the "Loco-Weed"..... 254
The Employment of Tannin in Tuberculosis of the Bones and Articulations 255
The Value of Water in Therapeutics..... 256
The Treatment of Chronic Dysentery by Enemata..... 257
The Prevention of Shock by Atropine... 258
A New Treatment of Aneurism..... 258
The Diagnosis of Tumors of the Corpus Quadrigemina..... 258
Ignipuncture of the Tonsils..... 259
The Treatment of Pleurisy by the Inhalation of Compressed Air..... 259
Senecio Canicida..... 260
The Treatment of Suppurative Disease of the Uterine Appendages..... 260
Hypodermic Injections of Quinine in Malaria..... 263
On the Action of some Dietetic Means and Drugs on the Secretion of Pancreatic Juice..... 263
Observations on Intestinal Surgery..... 265
Agaric Acid..... 267
The Chemistry and Pharmacology of the Organic Nitrites..... 267
Nutmeg-Poisoning..... 268
The Physiological Effects of Antipyrin 269
The Action of Paraldehyde..... 269
Intraocular Washing after the Extraction of Cataract..... 270

PAGE

Reviews..... 270

Correspondence.

Paris Letter..... 274
Berlin Letters..... 276, 279
Morphine-Poisoning..... 280
Adhatoda Vasica..... 281

Notes and Queries.

The Influence of Bitters on the Digestion and Assimilation of Albuminoid Matters..... 281
Antipyrin in Sciatica..... 282
A New Hypnotic..... 283
Resection of a Portion of the Ileum..... 283
The Pharmacological Properties of the Muscari Comosum..... 283
Ulceration of the Tongue and Mouth cured by Opium..... 284
The Nocturnal Incontinence of Urine in Children..... 284
The Action of Antipyrin on the Contractility of the Uterus..... 284
Headache and its Relation to the Retention of Uric Acid..... 285
The Hypodermic Employment of Lactate of Quinine..... 285
Arsenical Poisoning from Green Candles 286
Relation between Chlorosis and Menstruation..... 286
An Early Sign of Endocarditis..... 287
The Therapeutic Properties of Hysterionica Baylahuen..... 287
Some Experiences with Sulphonal..... 287
Antipyrin in Laryngismus Stridulus..... 288

Original Communications.

PROPHYLACTIC HYGIENE.

LECTURE VIII.—ON ANTI-VARIOLIC VACCINATION.*

BY PROFESSOR DUJARDIN-BEAUMETZ, PARIS, FRANCE.†

GENTLEMEN:—If there be any one infectious disease which is calculated especially to alarm populations when it appears among them by the ravages which it occasions, and by the repulsive and formidable array of symptoms which characterize this disease, it is surely smallpox. Confined at first to Asia, smallpox appeared in Europe in the sixth century after the invasions of the Saracens; and since then this malady has continued to make multitudes of victims in all parts of the world. Nevertheless, we shall see that by prophylactic measures certain countries, as Germany, by passing stringent laws, in the way of prevention, have been enabled to effect almost complete disappearance of this affection from their table of mortality. These prophylactic measures consist entirely in the creation in individuals of a soil unfit for the development of variola; this is obtained by variolization and vaccination.

* Advance sheets of a lecture delivered in Cochin Hospital, and translated for this journal by E. P. Hurd, M.D.

† Member of the Academy of Medicine, Physician to Cochin Hospital, etc., Paris, France.

Certain Asiatic nations, basing themselves on this fact of common observation, that persons who have once had an attack of smallpox acquire immunity from future attacks of the same disease, conceived the idea of inoculating smallpox in healthy individuals, and we find that in China and in India these practices have been in vogue from the most remote antiquity. Thus, the Brahmins practised variolization by means of setons which had been soaked in variolic pus, while the Chinese inoculated smallpox by means of crusts from dried pustules, which they placed in the nostrils of persons whom they wished to protect.

From India and Asia these practices passed to Georgia and Circassia. It was by virtue of this variolization that the people of these countries prevented the young slaves, who were sold in the market of Stamboul, from being disfigured by smallpox; and Emmanuel Timoni introduced variolization into Constantinople in 1673. Lady Mary Wortley Montagu, wife of the English ambassador to Constantinople, had the operation of inoculation practised on herself in 1721, and by reason of her influence and authority, variolization was introduced into England, and from thence it became generally adopted in the various countries of Europe.

Vehemently attacked by some, no less vehemently defended by others, variolization none the less constituted a real progress as compared with all the other methods of prophylaxis heretofore proposed. But it is easy to see how variable must be the results of these inoculations, since, in order to preserve from smallpox, it was necessary to inoculate smallpox, and it was impossible to foresee, when once this inoculation was performed, whether the disease would be regular, benign, or grave.

Jenner was one of these physician inoculators. He was born in 1749. He had observed for a long time that the farm-boys who had contracted pustules on their hands by contact with a similar eruption appearing on the teats of cows, were preserved from smallpox. He, then, in 1796, inoculated on a child, whose name has come down to us, the boy Phipps, the contents of some pustules, which a milkmaid, Sara Helms, had acquired in milking cows, and he remarked that this inoculation determined a like eruption in the points inoculated. Then (and this is a mark of the genius which characterized Jenner's discovery), three months afterwards, he inoculated the same child with smallpox. These inoculations remained inactive,—vaccine was discovered. It was not till two years after, in 1798, that Jenner published the results of his discoveries in a pamphlet of about sixty pages, entitled "An Inquiry into the Causes and Effects of Variolæ Vaccinæ."

I shall not take you through all the mazes connected with this history of vaccine for almost a hundred years, and I shall only here take up the most important and practical points belonging to this great question.

One would have thought that the labors of Pasteur, which, by reason of his immortal discovery of attenuated virus, have opened up new horizons to medicine and especially to prophylaxis, would have given us important light on the subject of the Jennerian vaccine. This has not been the case, and we have here one of the most curious points connected with this history. There is no doubt that smallpox is a microbe-disease; there is no doubt that vaccine is an affection of the same nature; and yet, despite the incessant microbiological researches made to elucidate this subject, we are ignorant of the real nature of these microbes, and especially of the points of contact which may exist between the micro-organisms of both these affections. Despite the excellent description which Cornil and Babès have given of the smallpox pustule and of the micro-organisms which it contains, it has still been impossible for us to cultivate these micro-organisms and to obtain vaccine from them.

We already know by the brilliant discoveries of Chauveau, made twenty years ago, that there exists in vaccine corpuscles which may be separated by filtration of the lymph in which they are found. These corpuscles are the only active agents in vaccine virus. These little bodies have been, you may be sure, subjected to all the processes of culture heretofore known, but the results are still very uncertain, and we have not derived any positive datum of knowledge therefrom. For instance, Cohn and Weiggert have succeeded in obtaining an imperfect culture, and Quinst, of Helsindfors, affirms that he has transmitted vaccine by means of these cultures, but these facts have been denied by other observers, so that we are still on this point in complete ignorance.

So, then, notwithstanding the incontestible progress which has been made these late years in this great subject of attenuated virus, we find the origin of vaccine still under dispute. Jenner, as you know, had contended that cow-pox does not sponta-

neously break out in the cow, but that this disease is inoculated by the hands of individuals who surgically treat the feet of horses on which are developed sometimes certain vesico-pustules, an affection to which Jenner gave the name of *grease*. This disease is called in France *eaux-aux-jambes*. Jenner, as you see, attributed to *horse-pox* the origin of vaccine.

This view seems to-day to be abandoned, and, if we may trust the experiments made by the Lyonnese Commission, under the direction of Chauveau, vaccine is really cow-pox, and not horse-pox.

There is still a more plausible view, which was once defended by Depaul in a memorable discussion which took place at the Academy of Medicine in 1863,—namely, that cow-pox or horse-pox is in reality only the smallpox of the animal. This view would fit in perfectly with the new notions which we to-day hold respecting attenuated virus, and it was quite logical to think that vaccine was nothing but smallpox, which, in passing through another organism, a process which we to-day effect experimentally for a great number of virulent affections, becomes enfeebled and attenuated in its properties, and then, when transmitted back to man, it constitutes vaccine.

Unfortunately, this is not the case. Despite the experiments made by Sunderland in 1831, who covered the teats of cows with smallpox scabs; despite the researches of Theile, in Russia, who inoculated smallpox in the cow, then took lymph from the eruption to transmit the disease back to man; despite the labors of Cely and of Leonard Vogt, of Hamburg, this question appears to be settled in a manner directly contrary to our previsions, and constantly smallpox gives smallpox and vaccine vaccine.

It seems, then, to be decided that these two diseases are clearly separated, the one from the other. Nevertheless, certain experimenters have not lost courage, and have thought that, perhaps, one might by special processes attenuate the virus of smallpox so as to make vaccine of it. Thus it is that some have proposed to mix milk with variolic virus, and so form a lacto-variolous virus. Papillaud takes a different tack, and proposes a double vaccination. He would have us commence first with vaccine, and then practise variolization. All these processes seem to be abandoned, and the medical profession has returned to the point from which it started,—namely, to the employ of the Jennerian vaccine.

As is the case with all virulent diseases, the virulence of vaccine augments or diminishes as it passes from one organism to another. In man, for instance, the successive passage of vaccine from man to man during long years diminishes the activity of the vaccine. Hence it is that governments award considerable prizes for cows affected with kine-pox, the natural kine-pox, whereby vaccinators may be able to renew their supply of virus which shall when inoculated display a new vigor and a new activity. When, on the other hand, you transmit the vaccine of the cow to the cow, it seems that its virulence increases. In animals, the vaccinal pustules take on a great development and furnish a considerable supply of vaccine.

If we add, that by virtue of reverting to the cow for our supply of lymph we avoid one of the dangers of vaccine,—to wit, the inoculation of syphilis,—you understand why animal vaccine has become so popular, and we may say to-day that in all the countries of Europe this kind of vaccine is generally preferred, and in Germany it is universally resorted to.

The idea of cultivating vaccine on the heifer is far from being of recent date, and from the time of the first experiments on vaccine we have seen this process brought into usage. It was put in practice in 1800, at Rheims, by Duquémel, by Valentin at Nancy, then at Naples by Trojà in 1805, and by Galbati in 1810.

This animal vaccine includes two kinds of virus. In the one it is the cow-pox, which has been inoculated from cow to cow. This is known as Megry's vaccine virus, of which Chambon and Lannois have been the principal propagators in France and Martin in America. The other kind is human vaccine which has been made to pass through the cow, and which constitutes retrovaccine. Whichever kind of virus you may have to do with, it none the less remains a fact that the organism of the heifer augments the virulence of vaccine, and there is general agreement that even human vaccine is regenerated in passing through the cow.

I cannot here enter into all the details of animal vaccine, but must refer you for full particulars to the excellent "Manual of Animal Vaccination" by Dr. Vaillard. I must, however, allude to the behavior of the vaccinal eruption in the heifer.

The fifth day after inoculation, a limpid, perfectly transparent liquid appears at the point of inoculation. This transparency con-

tinues during the sixth day, but after this the liquid becomes slightly opaque, and on the seventh day the purulence is well marked, and the pustule begins to be covered with crusts. It is during the fifth and sixth days that the vaccine ought to be taken; this is the time of its greatest activity.

When you make use of human vaccine, the period for taking vaccinal lymph is a little later, and it is the sixth or seventh day, ordinarily, when the vesicles are ready; but after the seventh day the vesicle becomes purulent, and the contained exudation loses its active properties.

When you take your vaccine from children, you should be perfectly sure as to the state of the child's health, and especially see to it that the parents are healthy. Choose only infants six months old, that are robust and well, and free from every communicable disease. You should inquire into the sanitary condition of the father and mother, for if vaccinal syphilis be rarely observed, it none the less exists, and the facts noted in Bretagne, at the Academy of Medicine, and in Algiers, are in this respect indisputable. This possibility of the inoculation of syphilis, and the necessity of a rigorous examination of children and of their parents, make physicians more and more inclined to abandon the employment of human vaccine. Lastly, the establishment of institutes of vaccine in the different countries of Europe has been another cause of the abandonment of the humanized vaccine.

But before taking up this subject of vaccinal institutes and of the processes put in usage for the preservation and propagation of animal vaccine, I must allude briefly to the phenomena produced by the inoculation of vaccine in man.

During the first three days which follow the scarification, nothing is observed around the inoculated point; this is the period of incubation. About the fourth day there appears a papular elevation, surrounded by a slight induration. The fifth day the vesicle is well formed, and the sixth you perceive an umbilication at its centre, and the lymph which this vesicle contains is clear and transparent. The seventh day the vesicle is at its acme. From this time maturation commences; the liquid becomes opalescent; a scab forms on the surface of the pustule; this scab finally separates, leaving a well-marked cicatrix, which shows that the individual has been vaccinated. This vaccinal eruption may present certain anomalies and complications, which are described with great care in all the treatises on vaccine. I would refer you especially to the articles under this head in the Dictionaries of Jaccoud and Dechambre.

Now that everybody seems to be agreed in the advantages of vaccination and revaccination, attempts have been made to establish in the great centres of populations institutes for the supply of vaccine matter. These vaccinal institutes tend to become more and more general; there is one under the special supervision of our Academy of Medicine; there are others at Lyons and Bordeaux; and recently quite an animated discussion was carried on between these institutes with regard to the superiority of the means employed for the conservation and propagation of vaccine. In foreign lands these institutes are also numerous. We see them established in Germany, Switzerland, and Italy. All these establishments employ animal vaccine. I have just told you the advantages of this kind of vaccine, which has more activity than the humanized virus, and is theoretically safer on account of the impossibility of the transmission of syphilis thereby. Before proceeding further, I must utterly deny the proposition so often put forth that because the heifer may be afflicted with tuberculosis it is possible to transmit at the same time vaccine and tuberculosis. This is an assertion absolutely unwarranted; no experimental fact has been alleged in its support; therefore I think that we ought to reject as utterly unfounded the possibility of the transmission of tuberculosis by vaccine. Moreover, to remove all likelihood of such transmission, usage is made at our vaccine institutes of animal virus only after the animal from which it is taken has been killed and the perfect soundness of the viscera has been noted.

But where there has been no little dispute, is respecting the question whether we ought to perform vaccination directly from the animal to man, or whether, on the contrary, vaccine which has been well preserved may not do as well. Some, for instance, affirm that inoculation direct from the animal to man is a guarantee of the success of the operation. Others, on the contrary, contend that there is no need of the transfer of lymph directly from the beast to the person undergoing inoculation, and that this should be looked upon as a barbarous procedure, especially when we take into consideration that vaccine which has been kept with care loses nothing of its active properties.

If you will refer to the very precise experi-

ments undertaken at Brussels in 1884 by the health inspector of the army, respecting animal vaccine, whether in a fresh (living) state, or after having been kept for some time, you will see that the advantage always remains on the side of the preserved vaccine, and out of fourteen thousand inoculations practised from 1864 to 1885, these are the proportions obtained with the two kinds of vaccine:

Preserved Vaccine.—Thirty-eight per cent. of good pustules, sixty-one per cent. of successes (including the false pustules).

Living Vaccine.—Thirty-three per cent. of good pustules, forty-eight per cent. of successes (including the false pustules).

Such are the figures given by Teteca, physician to the regiment of Brussels.*

If I add that vaccinations made with the living animal lymph take three times as long as those made with preserved vaccine, and that (what is a matter of special importance) by dint of the drying and preservation proprietors are able to furnish and send to long distances great quantities of vaccine, you will understand why it is that the advocates of the dried animal vaccine far outnumber those of vaccination directly from the living animal. It remains for me now to indicate what are the best methods of preservation of animal vaccine.

One of my pupils, who has given especial attention to the conservation of vaccine matter, Dr. Ciaudo, of Nice, has made known the methods which, in his judgment, are most efficacious for this end.† We have abandoned those capillary tubes with which you are all familiar. Here the vaccine is in liquid form and kept in the bulbous central part of the tube; the ends are drawn out fine and hermetically sealed. This was a costly way of vaccinating, only adapted to cases where there were many individuals to vaccinate at one time.

Another way formerly popular, but which speedily went out of vogue, was that of glass plates coated over with vaccine; the access of air is too free, and the vaccine soon spoils. Under this form the Academy of Medicine used to export vaccine; the failures attending this method of employing animal virus were frequent.

Instead of glass plates, much use has been made of ivory points which are coated with vaccine, and passed back and forth over scarifications made in the skin. Varlomont, to whom we are indebted for a fine treatise on vaccine, has been long the earnest advocate of these ivory points.‡

This is a method which, though superior to the glass plates, presents still serious disadvantages, and there seems to be a disposition at the present day to employ the vaccine in the form of powder, or, what is better, in the form of pulp.

Verardini was the first one to counsel vaccinal powder. He dried by the aid of the pneumatic machine the vaccinal lymph, and reduced this to powder. This powder is kept from the air, and answers a good purpose for vaccinations. Its inoculation is, however, attended with some difficulty, hence most persons prefer the glycerized pulp. A homogeneous paste is made with vaccinal lymph and glycerin, and the scarificator or lancet is dipped into this pulp. This paste keeps very well for a long time, it is easy of transportation, and seems to retain the virulent properties of vaccine, and be just as active as if taken directly from the heifer.

There are many processes for obtaining this vaccinal pulp,—that employed at the Vaccinal Institute of Milan, that of Pissin, of Leipsic, that of Pfeiffer, of Weimar, that of Varlomont, and that of the Institute of Lyons. This is the way this glycerized pulp is prepared in the army. I quote from the official circular:

"Scrape out the vaccinal vesicles of the heifer with a sharp-cutting curette, and deposit the pulp thus obtained in a glass mortar scrupulously clean. Add an equal quantity of chemically pure neutral glycerin, and triturate together to a homogeneous paste, about the consistence of honey; there should be no lumps. Put the pulp into sterilized glass tubes, cork tightly, and seal with sealing-wax."

According to the figures given by Hubert, one heifer will furnish 4.50 grammes of pure pulp, enough to vaccinate a thousand men, at a cost of .049 franc (or less than a cent) per man (Vallin). If you make use of humanized vaccine taken from infants, the cost per man will be .237 franc (or a little less than five cents).

It remains for me now, in concluding what pertains to vaccination, to say a few words as to the manner of vaccinating. Many differ-

* Teteca, "Animal Vaccine Preserved and Living" (*Congrès International de Vienne*, 1887).

† Ciaudo, "A Comparative Study of Animal and Humanized Virus." Paris, 1882.

‡ Varlomont, "Treatise on Vaccine," Brussels, 1883, etc.

ent modes have been employed. There is, first of all, the mode which is most natural,—namely, that of friction, counselled by Morlamm; then that of the application of the vaccine to a blistered surface,—a process to-day abandoned. Bourgeois advised to insert the vaccine under the skin, and to practise a real hypodermic injection of the virus. Then, again, there is the method of inoculation by pricking, which is done either with an ordinary needle, or with the canulated needles of Depaul or of Mathieu.

The most common process is that which was recommended by Sutton, and which consists in pricking up the epidermis with the point of a lancet, and inserting there the vaccinal virus. This is the method employed by Chambon, who makes use of real cataract-needles. It has also been proposed to make incisions, more or less deep, with a lancet, or to practise light scarifications. This last process deserves to be retained, and when you have to do with persons refractory to vaccine, it is a good plan to vaccinate by scarifying the place which you wish to inoculate, and rubbing well in the vaccinal lymph.

The same process may be employed when you desire, by means of these vaccinations, to cause the disappearance of certain birth-marks. We have here, as you know, a method very much in vogue for the treatment of those disfiguring *nævi materni*, and which often gives good results. Lastly, apparatuses more or less complex have been invented, such as Monteil's scarifier, the vaccinator of Varlomont, the more complex instrument of Burcq, etc.

Whatever method you may employ, you must always avoid hemorrhage in vaccination. When there is a flow of blood, it washes away the virus, and thus prevents the vaccine from taking. You should also bring the vaccinal virus well in contact with the denuded derm, and this is what gives to the method called Suttonian a very marked advantage over the method by pricking.

Depaul practised for many years at the Academy of Medicine these inoculations by pricking, using for this purpose a needle, which even now bears his name; and if this process is very rapid and but little painful, it is often inefficacious, for the needle in traversing the tissues, does not always deposit in the derm the virus with which it is charged, so that the operation may have to be repeated several times. There is, finally, a precaution, which, unfortunately, is too often neglected,—namely, the taking care to have the instruments antiseptically clean when you have to perform numerous vaccinations. In such cases you need to have a sufficient number of lancets to enable you, when you have inoculated one individual, to plunge the lancet then used into a disinfecting solution, and have it thoroughly aseptic before charging it anew with vaccine to vaccinate another individual.

It must be borne in mind that if our government has not made vaccine obligatory in this country, it, nevertheless, requires that all soldiers shall be revaccinated on reporting themselves for duty; and as to-day all Frenchmen have to pass through a term of military drill, we may affirm that all male adults are vaccinated or revaccinated from the age of twenty to twenty-one years. As, on the other hand, the Minister of Public Instruction also requires that revaccinations shall be periodically practised on all the pupils of the public schools, you will be called upon to make these vaccinations on a great number of individuals, and for that reason you ought to employ the most rapid and sure methods to obtain the best results.

The place generally chosen for performing vaccination is the upper part of the arm. To avoid the marks occasioned by the vaccinal cicatrices, and which are something of a disfigurement for women, it has been proposed to vaccinate on the leg, or even on the lateral parts of the thorax. You should not vaccinate children on the leg, except in compliance with the express wish of the family. In the very young child the pustules are very likely to be irritated by the urine and fæcal matters, and this enhances the disagreeable effects of the operation. In the adult, friction of the arm and the efforts of walking, added to the inflammation which these scarifications always develop, augment the intensity of the vaccinal symptoms, and a rest of several days in bed is often necessitated. I believe that, if you would avoid the vaccinal marks on the arm, there would be no objection to performing vaccination on the sides of the thorax. I do not know, however, that this practice has ever been adopted.

It is hardly needful that I should take this occasion to insist on the utility of vaccination. The conflict which has been going on between the advocates and opponents of vaccine ever since Jenner's discovery, a conflict which was still vehement during the last years of his life, seems to-day to have ceased,

with the complete rout and defeat of the anti-Jennerians. The cause of this defeat is to be found chiefly in this great fact of every-day observation in our neighbor country, Germany,—namely, that by the rigorous enforcement of a law compelling vaccinations and revaccinations, the Germans have been able to stamp out smallpox in that great empire, and this fact is so demonstrative, that you will permit me to dwell at some length upon it. I shall tell you why this law has been adopted, and how it is applied. We find in this study numerous lessons by which our own country might greatly profit.

At the end of the Franco-Prussian war the German army brought home the smallpox, and from 1870 to 1874 this disease made terrible ravages throughout the entire German empire, and the mortality from this disease attained the yearly average of 252.27 per 100,000 inhabitants. In presence of this mortality from smallpox, always increasing, the Medical Society of Königsberg submitted to the Reichstag the draft of an ordinance to render vaccination and revaccination compulsory. This law was adopted April 8, 1874, and was fully carried into effect throughout the whole German empire, April 1, 1875.

This law specifies that vaccination shall be obligatory on all children during the first year, and that revaccination shall be performed on all children that have passed their twelfth year. The fathers, the tutors, or guardians of children who do not comply with this statute are subjected to a fine not exceeding one hundred and fifty marks (one hundred and eighty-seven francs, or thirty-seven dollars), or to imprisonment from one to fifteen days. The law specifies the vaccine which is to be used, the methods, etc.

In the discussion which preceded the adoption of this law, the opponents of vaccine made one supreme effort, and urged in turn the possibility of the inoculation of syphilis, of erysipelas, the transmission of tuberculosis, typhoid fever, of diphtheria, of measles, and of scrofula. Save in the case of syphilis and erysipelas, the opponents of vaccine did not furnish one positive fact to support their contention, and, as for syphilis, it was shown that, in order to avoid the possibility of transmitting this disease, all that was necessary to do was to have recourse to animal vaccine. As for infectious erysipelas, which is transmissible by inoculation, care in antisepsis sufficiently protects against communicating this disease.

Dr. Jeunhomme,* who has given us very precise information as to the state of vaccination and revaccination in Germany, has shown us the great advantages which this country has derived from the enforcement of this law, by proving that, in less than thirteen years, the German empire has caused the mortality from smallpox to disappear, and to such an extent that the mortuary records have suppressed the name of smallpox from their tables. Would you see the statistics that bear out this affirmation? I will cite some of the figures.

Pepper affirms that there has not been a single death from smallpox in the German army since 1874. In the city of Berlin the disease has been virtually stamped out, as you can see by glancing over the two following tables, in which is compared the mortality from smallpox per 100,000 inhabitants from 1880 to 1888:

MORTALITY FROM SMALLPOX IN PARIS AND BERLIN PER 100,000 INHABITANTS.

Years.	Paris.	Berlin.
1881	44.0	0.80
1882	28.0	4.74
1883	20.0	0.43
1884	3.3	0.33
1885	3.0	0.00
1886	0.9	0.00
1887	9.0	0.00
1888	11.0	0.00

We may appeal to figures equally convincing from the statistics of other countries. Thus, at Zurich, the law rendering vaccination obligatory has not been enforced since 1883, and the annual mortality from smallpox has reached the figure of 80 to 85 per 100,000. In our own country even, where vaccination is compulsory in the army, the mortality in 1885 was but 6 per 100,000 soldiers, and to-day it is absolutely *nil*, as in Germany, and this has come about since the new regulations came into force which compel vaccinations and revaccinations in the army.

Since November 21, 1888, animal vaccine has become obligatory in the army, and five centres of supply have been established,—one at Paris, one at Chalons, one at Bordeaux, and two in Algiers. I must refer you for further information under this head to the very complete article on the subject in the *Bulletin Officiel du Ministre de la Guerre*, and to Vallin's communication "On Animal Vac-

* Jeunhomme, "On Vaccination and Revaccination in Germany" (*Revue d'Hygiène et de Police Sanitaire*, October 20, 1888).

cine as employed in the Army," published recently in the *Revue de Hygiène et de Police Sanitaire.*

But Ritchie has furnished regarding the protective benefits of vaccination still more satisfactory statistics. He takes what has happened at Sheffield, where, out of one hundred thousand children under ten years of age, there were ninety-five thousand that had been vaccinated, and five thousand that had not been vaccinated. The ninety-five thousand vaccinated furnished one hundred and eighty cases of smallpox and two deaths. The five thousand not vaccinated gave one hundred and seventy-two cases of smallpox and seventy deaths. "If all the children of Sheffield," says Ritchie, "had been vaccinated, there would have been two hundred cases of smallpox and a little more than two deaths. On the other hand, if none of these one hundred thousand children had been vaccinated, there would have been three thousand three hundred and seventy-seven cases of smallpox and thirteen hundred and thirty deaths,—*i.e.*, a mortality six hundred times as great."

Are the benefits of vaccination likely to last all through life. This question must be answered decidedly in the negative, and it seems that every ten years this acquired immunity tends to become feeble or disappear, hence the necessity of revaccinations. It seems, too, that as people advance in years, the liability to contract smallpox diminishes. In an interesting communication made to the Society of Practical Medicine, Toledano has shown that from the point of view of vaccine it is not so, and that the revaccinations practised at the Hôpital des Invalides had given as favorable results in the aged as in young people. You can judge of this by the following figures:

Years.	Successes.		Revaccinations.		Per cent.
20 to 30	2	out of	6	=	33
30 to 40	5	"	10	=	50
40 to 50	14	"	17	=	82
50 to 60	21	"	35	=	60
60 to 70	41	"	60	=	68
70 to 80	31	"	37	=	84½
80 to 90	10	"	13	=	77
90 to 100	1	"	1	=	100
Total	125		169		70

However, the results obtained by the vaccinations are extremely variable and oscillate between forty and fifty per cent. of successes, and this is the consequence of the method employed in vaccinating and the kind of vaccine that is used. Dr. Anthony, who has given this question much consideration, has obtained in the army seventy per cent. of successes, and he thinks that we ought to attribute this result to the multiplicity of punctures which he makes. A result still more remarkable has been obtained in the army by André, who, out of one hundred and ninety men revaccinated, has had one hundred and eighty-two successes. Vallin, in the third corps of the army, has obtained an average of forty-six per cent. of successes.

It remains for me to discuss here the value of the number of vaccinal inoculations from the point of view of the immunity acquired by vaccination. It seems that the more numerous and prominent the vaccinal cicatrices are, the greater is the immunity. The table given by Marston, who sums up the results of his observations of six thousand vaccinated subjects admitted to the London Smallpox Hospital in twenty-five years, is in this respect very interesting. In vaccinated subjects who had no appreciable cicatrices, the mortality from smallpox was twenty-one per cent.; with one cicatrix, seven and a half per cent.; with two cicatrices, 4.12 per cent.; with three cicatrices, 1.7 per cent.; with four cicatrices and more, .07 per cent. It results, then, from this that we ought not to be satisfied with one vaccinal scar, and that we should try and obtain three or four, in order to feel sure that a real immunity has been conferred on the individual.

Oppert had previously obtained similar results. These are his figures:

Number of cicatrices.	Percentage of grave cases.
0	82
1	34
2	25
10	13
11	5
12	4

With reference to these cicatrices, Paul Lalagade, of Albi, who has written a work entitled "A Practical Study on Vaccinal Cicatrices," has affirmed that the greater one's aptitude to take vaccinal disease, the greater the aptitude to take the kine-pox disease again; in a word, that the more numerous and well characterized the previous kine-pox marks, the more susceptible the individual will be to the effects of a new vaccination, and Lalagade bases his statements on the following statistics, which seem to be demonstrative:

Previous cicatrices.	Complete successes.	Vaccinal efflorescence.	Negative results and spurious vaccinations.	Total of revaccinations.	Percentage of complete successes.
1.....	101	113	567	781	13
2.....	152	109	623	884	17
3.....	288	117	1025	1,430	20
4.....	669	249	1535	2,453	27
5.....	829	232	1627	2,688	31
6.....	1048	276	1224	2,548	41
7.....	46	21	25	92	50
8.....	87	19	66	172	51
Total.....	3220	1136	6692	11,048	29

Such, gentlemen, are the considerations which I desired to present relative to vaccine and vaccination. Although most of you have kept posted in all the scientific aspects of this great question, I thought it well to bring before you again the principal points, and to insist especially on the necessity which is imposed on our country of adopting a law rendering vaccinations and revaccinations obligatory.

But the benefits which have been derived from the Jennerian vaccine against one so formidable infectious disease are not limited to variola, and we shall see that by virtue of attenuated virus, we may create other vaccines which shall confer on man a real immunity against other infectious diseases. This will be the subject of my next lecture.

CHEMICAL AND CLINICAL EXPERIMENTAL RESEARCHES ON THE SALICYLATE OF MERCURY.

By W. C. Caldwell, M.D., Chicago, Ill.

FOR simplicity the following order of presentation will be used:

I. Formulæ of the salts.
II. Physical and chemical reactions.
III. Report of clinical experiments; and,
IV. Physiological and therapeutic reactions.

I.—FORMULÆ OF THE SALTS.

Because mercury forms both mercurous and mercuric compounds, because salicylic acid has two atoms of replaceable hydrogen, and for other reasons, there are a number of salts of salicylic acid and mercury. There is yet difference of opinion as to the formulæ, but the following may be mentioned:

1. Mercurous salicylate,

$$C_6H_4<\begin{matrix}OH\\CO_2-Hg-Hg-CO_2\end{matrix}>C_6H_4.$$

2. Neutral mercurous salicylate,

$$C_6H_4<\begin{matrix}O\\CO_2\end{matrix}\begin{matrix}-Hg-Hg-\\-Hg-Hg-\end{matrix}\begin{matrix}O\\CO_2\end{matrix}>C_6H_4.$$

3. Mercuric salicylate,

$$C_6H_4<\begin{matrix}OH\\CO_2-Hg-CO_2\end{matrix}\begin{matrix}OH\\\end{matrix}>C_6H_4.$$

4. Neutral mercuric salicylate,

$$C_6H_4<\begin{matrix}O\\CO_2\end{matrix}\begin{matrix}-Hg-\\-Hg-\end{matrix}\begin{matrix}O\\CO_2\end{matrix}>C_6H_4.$$

These four above salts I have made and described in the *Western Med. Rep.* (Chicago), October, 1888.

5. Neutral mercuric salicylate, Heyden's formula, $C_6H_4<\begin{matrix}O\\CO_2\end{matrix}>Hg$.

6. Neutral mercuric salicylate, Fischer's formula, $C_6H_3<\begin{matrix}OH\\CO_2\end{matrix}>Hg$. In this there is a rearrangement of the atoms in the molecule of Heyden, but it is defective, as the radical OH is univalent, instead of bivalent, as represented in the graphic formula of Fischer.

II.—PHYSICAL AND CHEMICAL REACTIONS.

In this paper the consideration of the physical and chemical reactions of these salts will be confined entirely to those which will aid in explaining its action on the animal organism in health and disease, and when the system is saturated with other drugs, and also such reactions as are liable to occur in compounding prescriptions where the physician may desire to have other drugs in the same prescription with the mercurial salt.

There is great difference in the reactions of the acid and neutral salicylates of mercury. The acid salicylates behave very much as the mineral salts of mercury, while the actions of the neutral salicylates are entirely different and directly opposite to the phenomena of these salts. Mercurous salicylate, like calomel, is insoluble in water, and forms a black precipitate with alkalies. Mercuric salicylate is slightly soluble in water, freely soluble in water acidulated with hydrochloric acid, freely soluble in citrate of potassium (possibly the citro-salicylate of mercury and potassium is formed), and, like the bichloride, it forms a yellow precipitate with the alkalies.

I have not studied the reactions of neutral mercurous salicylate. The neutral mercuric

salicylate which I have made produces an entirely different set of reactions from those just described. It is insoluble in hydrochloric acid. Instead of being precipitated by the alkalies, it is freely soluble in them, which is quite a contrast with the mercurous and mercuric salicylates and the mineral salts. It is not soluble in citrate of potassium, like the mercuric salicylate. The remainder of the experiments, physical, chemical, and clinical, which will be described in this paper, were all made from the same bottle, obtained from Lehn and Fink, and is said to have been manufactured by Scherring, Germany, according to Heyden's formula, $C_6H_4<\overset{O}{CO_2}>Hg$. I am particular in stating the kind I have used in these experiments because the experiments would be worthless if the preparation was not known.

Only a few reactions have been investigated, and these may be arranged as follows:

1. *With the Mineral Salts of the Heavy Metals.*—When a solution of the salicylate and the tincture of the chloride of iron are poured together, there is formed bichloride of mercury and a black precipitate of salicylate of iron. This is cleared up by the addition of liquor ammonii citratis by forming citro-salicylate of iron and ammonium, but, of course, the mixture is objectionable on account of the bichloride; hence it should not be prescribed with the tincture of iron. With the sulphate, and also the pyrophosphate of iron, there is chemical action, hence it should not be prescribed with them. When combined with the sirup of the hypophosphites of iron, manganese, strychnine, quinine, etc., in an acid solution, there is precipitation of the bases. With sirup of iodide of iron a black precipitate appears, and with sirup of iodide of manganese, a light precipitate. These both clear up by adding liq. ammonii citratis, but, of course, are objectionable.

2. *With the Organic Salts of the Metals.*—When a bicarbonate solution is added to an aqueous solution of tartrate of iron and potassium, or citrate of iron, there is no chemical action. After standing several days the mixture is still clear. The carbonate of iron is insoluble, and no chemical action occurs when brought in contact with the salicylate in solution of bicarbonate of sodium. It may be also mentioned here that with Fowler's solution of arsenic there is no precipitate, nor does there appear to be any immediate chemical change.

3. *With the Carbonates and Bicarbonates of the Alkalies.*—It is very freely soluble in the carbonates of potassium, sodium, and ammonium. It is also soluble in the bicarbonates, but not so freely; however, the bicarbonate being milder, is a more convenient vehicle for its therapeutic use. After standing several weeks the bicarbonate solution decomposes.

4. *With Hypophosphites.*—With hypophosphite of lime a light precipitate occurs; with potassium and sodium none.

5. *With Halogen Salts of the Alkalies.*—It is very freely soluble in iodide of potassium. This appears to be a physical process, but in time chemical change occurs and iodide of mercury is formed. As the dose is 1 grain three times daily, it would be a serious matter if it were converted into the biniodide in the animal organism, hence to determine this a number of experiments were made, which will be described later.

Since the salicylate and its albuminate are very freely soluble in iodide of potassium solution, it may be that in this way it promotes the absorption of the mercury.

It is freely soluble in the chlorides, though less than in the iodides and more than in the bromides. It is more soluble in chloride of sodium than in chloride of ammonium.

The solution of chlorides, as with the iodides and bromides, is physical, though in time chemical change occurs. Lime-water added to the chloride solution at first or after four days does not throw down a yellow precipitate, as would occur if bichloride were present. But a copper wire heated in it is soon covered with mercury, which does not occur in a carbonate solution acidified with salicylic acid. This suggests the probability that the sodium chloride renders the salicylate less stable, and hence it may be that the sodium chloride in the digestive tract and blood may convert it into the bichloride. If it is liable to be converted into the bichloride, as calomel is by large quantities of common salt, it would be unsafe to exhibit two or three grains daily without keeping the patient under close observation.

I have not made any clinical experiments by administering large doses of salt with one grain of the salicylate three times daily.

6. *With Acids.*—It is insoluble in the vegetable acids. In cold dilute nitric acid there appears to be no immediate change, but after boiling a few minutes the dilute nitric acid decomposes it. It is dissolved with great difficulty in boiling dilute sulphuric acid. After boiling in dilute hydrochloric acid for several minutes, the filtrate does not yield bichloride

of mercury. The concentrated acids decompose it at once.

III.—REPORT OF CLINICAL EXPERIMENTS.

These experiments were made to determine the first-contact and elimination-contact actions of the neutral salicylate of mercury in health on—

1. The stomach, manifested by nausea and loss of appetite.
2. The duodenum, manifested by loss of appetite.
3. Lower intestine, manifested by diarrhœa.
4. The buccal cavity, manifested by salivation.
5. When iodide of potassium is given.

These experiments were performed by Dr. Ludwig Hektoen, house physician, Cook County Hospital. The patients were up and around the wards assisting the nurses.

To Class 1 the medicine was given in bicarbonate solution with twenty grains of bicarbonate of sodium, one hour before meals. Two adult males, $\frac{1}{8}$ gr., t. i. d., for seven days; then $\frac{1}{4}$ gr., t. i. d., for three days; then 1 gr., t. i. d., for ten days; no disturbance at all. Four adult males, $\frac{1}{8}$ gr., t. i. d., for seven days; no symptoms. Three adult males, $\frac{3}{8}$ gr., t. i. d., for eight days; no disturbance. One adult male, $\frac{1}{8}$ gr., t. i. d., for four days, then $\frac{3}{8}$ gr., t. i. d., after ninth dose of which began to suffer from salivation, nausea, and diarrhœa.

To Class 2 the medicine was given in pill, one hour before meals, with twenty minims of dilute hydrochloric acid. Two adult females, $\frac{1}{8}$ gr., t. i. d., for four days; then $\frac{3}{8}$ gr., t. i. d., for three days; no disturbance. Two adult males, $\frac{1}{8}$ gr., t. i. d., for ten days; no symptoms. Five adult males, 1 gr., t. i. d., for twelve days. Three had two or three movements of the bowels a day, but no other symptoms. One adult male, 1 gr., t. i. d., first day; 2 gr., t. i. d., second day; 3 gr., t. i. d., third day. On the morning of the fourth day there was moderate nausea, slight diarrhœa, and tender gums, when the medicine was discontinued after taking eighteen grains in three days.

To Class 3 the medicine was given after meals in bicarbonate solution. Six adult males, $\frac{3}{8}$ gr., t. i. d., for seven days; no symptoms.

To Class 4 the medicine was given in pills after meals, with twenty minims of dilute hydrochloric acid. Two adult males, 1 gr., t. i. d., for six days; no symptoms.

To Class 5 the medicine was given in 1-grain doses after meals, to eight patients who were taking 10 grains of iodide of potassium before meals. In every case salivation occurred before twelve doses were taken, in three after the third, in two after the fourth, in one after the seventh, in one after the tenth dose. In four cases the salivation was slight, accompanied with nausea and vomiting. In two cases, salivation severe but no other symptoms.

These experiments show that three grains daily for a week or two at least usually will not affect any part of the gastro-intestinal tract, though in one case $\frac{3}{8}$ of a grain, three times daily, on the third day produced salivation. This patient may have been constipated, or suffering from renal disease, and from one of these conditions the mercury accumulated, or it may have been an idiosyncrasy. It is well to remember any way that a small dose can salivate. It did not seem to make any difference when it was given or whether with acid or soda. It is also evident that in large doses it must not be given with iodide of potassium. If it is converted into the biniodide in the blood, instead of alimentary canal, it might be advantageous to give $\frac{1}{4}$ gr. of the salicylate at bedtime and the iodide of potassium one hour before meals. In this way they probably would meet in the blood-current, instead of alimentary canal, and hence we would get the action of the biniodide in proper dose and still without it passing through the stomach to derange it. It would be equivalent to the subcutaneous injection of it.

IV.—PHYSIOLOGICAL AND THERAPEUTIC REACTIONS.

First-Contact Actions.

1. *Action on Albumen, Etc.*—To show the relative value of the salicylate its actions will be compared with those of the bichloride, and such actions will be presented here as are liable to occur when used in surgical therapeutics or when taken into the animal organism. I will consider the actions of the salicylate and the bichloride on albuminous substances in—

1. Neutral reaction,—that is, in the natural reaction of egg albumen, blood, muscle, etc.
2. Acid reaction,—hydrochloric acid.
3. Sodium chloride.
4. Sodium chloride and hydrochloric acid, —stomach.
5. Alkaline reaction, carbonate of sodium, —duodenum.

To determine their action on fresh raw liver, five equal thin slices were placed in five two-ounce bottles containing distilled water.

To No. 1 was added dry powder of salicylate of mercury to make $\frac{1}{2000}$. To No. 2 was added bichloride to make $\frac{1}{2000}$. To No. 3, salicylate of mercury, $\frac{1}{2000}$; sodium chloride and hydrochloric acid, U. S. P., each $\frac{1}{100}$. To No. 4, bichloride, $\frac{1}{2000}$; sodium chloride and hydrochloric acid, U. S. P., each $\frac{1}{100}$. To No. 5 was added solution of salicylate of mercury (in bicarbonate of sodium solution $\frac{1}{700}$) to make it $\frac{1}{2000}$.

In comparing Nos. 1 and 2 it was noticed that the coagulating action of the bichloride was at once marked, far more rapid than that of the salicylate. But after twenty-four hours the difference in the totality of their action did not seem to be quite so great,—that is, it was not quite so easy to distinguish the tube by the appearance, whereas at first the difference was so plain that there was no difficulty. From this it appears that the bichloride, where equal strengths are compared, has the stronger coagulating power; but the most important fact learned from the above is that it takes the salicylate longer to do its work. What the bichloride does in a few minutes takes the salicylate several hours to do. Now, if this be true, that the salicylate if given time will have considerable action (though much less than the bichloride), but that during the first few hours its action is very slight, this will help to explain why it can act after entering the circulation, and yet during its short stay in the gastro-intestinal canal produce very little irritation of the mucous membrane, because it has not had sufficient time.

Nos. 3 and 4 presented somewhat similar phenomena, except that the acid acted at once. In No. 5 there was no coagulation at all, the albuminate formed being soluble in the carbonate. Mercuric albuminate is insoluble in distilled water or acid menstruum, hence when formed in these it is precipitated. If the dry salicylate is dusted into an aqueous solution of raw egg albumen or saliva there is slight coagulation, but nothing so marked as that produced by the bichloride.

The albuminate is soluble in the halogen salts of the alkalies, also slightly soluble in the carbonates of the alkalies. If a solution of bichloride, $\frac{1}{60}$, be dropped into a sodium chloride solution of albumen, a precipitate appears, which soon redissolves. If the solution contains acid, as occurs in the stomach, the precipitate remains insoluble. Hence albuminates formed in the stomach, in the presence of large quantities of salt, without acid, would be soluble. But the albuminate formed during gastric digestion, when there is both sodium chloride and hydrochloric acid, would very likely be insoluble, and in time would pass into the duodenum. To determine whether the albuminate after entering the duodenum can act as an antiseptic, I placed some fresh liver pulp in two glasses. To one was added albuminate to make $\frac{1}{2000}$ and bicarbonate sodium $\frac{1}{100}$. To the other was added bicarbonate sodium $\frac{1}{100}$. The albuminate did not appear to retard the putrefaction in the least. I then made a number of experiments, and found that $\frac{1}{15}$ prevented putrefaction. Hence, if bichloride is an antiseptic in the intestinal canal, it seems that it is either on account of the bichloride passing as such into the duodenum, or due to its action during elimination-contact. The salicylate is converted into the albuminate much more slowly than the bichloride, and, besides, is probably not at all absorbed from the acid stomach, hence it is probable that a much larger part of it enters the duodenum as the salicylate; for this reason it would appear that it would be better adapted for intestinal antisepsis than the bichloride, which very likely produces most of its action after it has entered the blood during elimination-contact. When bichloride is poured into a solution of albumen in carbonate of sodium the yellow oxide is formed, but in a few seconds the color disappears on account of the formation of albuminate of mercury. A small part of the albuminate dissolves, but nothing like so readily as that formed in sodium chloride solution. Hence it appears that if any of the bichloride taken into the stomach should escape conversion into the albuminate or absorption from there, that on entering the alkaline duodenum it would not be permanently precipitated as the oxide, but form albuminates.

2. *Action on Putrefaction.*—To determine its power to prevent putrefaction, one ounce of an aqueous solution of fresh liver pulp was placed in each of six glasses.

No. 1 remained plain for comparison.

No. 2 added bicarbonate of sodium, $\frac{1}{700}$, to compare with the bicarbonate of sodium ($\frac{1}{700}$) solution of the salicylate.

No. 3 added salicylate, $\frac{1}{2000}$, and bicarbonate sodium, $\frac{1}{700}$.

No. 4 added dry salicylate, $\frac{1}{2000}$, to the neutral liquid.

No. 5 added dry salicylate, $\frac{1}{2000}$, and one per cent. hydrochloric acid, U. S. P.

No. 6 added bichloride of mercury, $\frac{1}{20000}$. The temperature was kept between 70° and 90°.

No. 2 was the first to become putrid, then a half-day later No. 1. At the expiration of three days there was no putrid odor from any of the others, and the one containing the bichloride had the least odor. These experiments show that salicylate of mercury prevents sepsis, whether in solution or not, and regardless of the menstruum. Though it is insoluble in acid and neutral menstrua, yet it is decomposed by organic substances, and acts as an antiseptic. It is in this way that iodoform and salol act as antiseptics.

To No. 2, which became very putrid, the salicylate, $\frac{1}{20000}$, was added, and in twelve hours the odor was much reduced, though by no means entirely gone. It appears that the powder, though only very slightly soluble in water, would be an effective antiseptic powder for surgical therapeutics. It seems that it would arrest putrefaction of the discharges in wounds and ulcers, besides acting as a mild stimulant. It might be better diluted with some inocuous powder, as boric acid. Of course, if large quantities were absorbed, mercurial poisoning might follow.

3. *Action on Artificial Digestion.*—To determine this, and compare it with the action of bichloride, the following five four-ounce mixtures were prepared, and kept at a temperature ranging from 100° to 110° F. for six hours:

Nos. 1, 2, and 3 contained pepsin, hydrochloric acid, boiled egg albumen, and water. To No. 2 was added salicylate of mercury sufficient to make it $\frac{1}{60000}$. The salicylate was in bicarbonate solution, and was precipitated on being poured into the acid mixture. To No. 3 was added bichloride to make it $\frac{1}{60000}$. At the expiration of six hours nearly all the albumen in No. 1 had been dissolved. There was only a trifle more in No. 2, and considerably more in No. 3; hence the salicylate seems to interfere very little with artificial pepsin digestion in six hours, and notably far less than the bichloride. Nos. 4 and 5 contained pancreatin, bicarbonate of sodium, boiled egg albumen, and water. To No. 5 was added salicylate of mercury, $\frac{1}{60000}$. At the expiration of six hours there was a little more undissolved albumen in No. 5 than in No. 4. Hence it appears that the salicylate in both acid and alkaline menstrua slightly interferes with artificial digestion, though nothing like to the extent that it does with putrefaction. Bichloride acts much more rapidly than the digestive ferments, and salicylate much slower, hence during the few hours sojourn of the food in the digestive tract, the bichloride seriously interferes, because it acts faster than the ferments, while the salicylate does not interfere so much, because peptonization and absorption are finished, and the excrementitious material has cleared the ileo-colic valve before the salicylate has spent its force. $\frac{1}{20000}$ prevents putrefaction nearly as completely as the bichloride, while $\frac{1}{60000}$ does not arrest digestion near as much as the bichloride. However, to be accurate, these comparisons should be made with the same strength.

4. *Action on the Living Tissues.*—1. *Skin.*—Its affinity for organic compounds is very weak, hence it is not irritating, like the mineral compounds of mercury. For this reason the ointment is very mild, and does not irritate the skin, like the citrine ointment does. It is better than the other mercurial ointments for the skin lesions of syphilis. This is specially the case where the lesions are on the face or hands. Ladies whose faces have become rough, scaly, and disfigured by irregular hyperæmic patches, find marked improvement from applying the ointment at bedtime. Dr. Inge speaks highly of it in other skin lesions.

2. *Mucous Membranes.*—It is equally mild when applied to mucous membranes. It is well spoken of in ocular therapeutics. Clinical experiments show that when in contact with the mucous membrane of the empty stomach or duodenum there is only very slight irritation in comparison with that produced by the bichloride.

Four patients who had been taking $\frac{1}{32}$ grain of bichloride, t. i. d., for about six weeks with improvement, began to complain of loss of appetite and strength, and increase of skin lesions. These I changed to the salicylate, $\frac{1}{2}$ grain, t. i. d., and return of appetite was soon noticed. It is very difficult to distinguish the first-contact from the elimination-contact action on the gastro-duodenal canal. It is not difficult to see that bichloride salivates by elimination-contact, and it is tolerably probable that much of the irritation of the intestines in mercurial poisoning is due to elimination-contact action, but in the stomach and duodenum it is not quite so plain. However, if we consider the conditions which favor irritation, and the phenomena of absorption and elimination by excretion through the gastro-intestinal tract, it will appear that elimination-contact is an important factor. Although during elimination the drug is much

diluted on account of being mixed with the whole quantity of blood, yet it must be remembered that this action is continuous, and that it passes through the neighboring vessels many times, and specially must it be remembered that its irritative power depends chiefly on chemical action, and that the chemical phenomena occurring in the glandular cells during the elaboration of its specific secretion are very active and highly conducive to decomposition of the mercurial salt, permitting the destructive action of its now nascent radicals: hence, during elimination-contact, when the gland is at the height of its function, the conditions are far more favorable for irritation than during absorption.

Absorption.

Absorption is a physical process in which the material to be absorbed must be soluble in the fluids on each side of the septum and have affinity for the material of the septum. Salicylate of mercury is insoluble in acids, hence it probably cannot be absorbed from the stomach, when it is acid during digestion. It is soluble in alkalies, and hence when the stomach is empty and alkaline, or when artificially rendered so by large doses of bicarbonate of sodium, one of the three conditions for absorption is present, and it is probable that it would then be absorbed. The fact that, unlike the bichloride, it is insoluble in acids and soluble in alkalies, makes its conditions for absorption just the opposite of bichloride. Their relation may be to a certain extent compared to that of salicylate of sodium and salicylate of phenol. It is supposed that salol produces less loss of appetite, because it can pass through the stomach undissolved and be absorbed from the duodenum, so it seems salicylate of mercury might also.

If a drop of dilute hydrochloric acid be let fall into a bicarbonate solution, a precipitate appears. This is not due to chemical change,—that is, to the formation of bichloride of mercury,—which, in the presence of the bicarbonate, is precipitated, because it readily redissolves in excess of alkali, which does not occur when bichloride is precipitated. It is probable that when a bicarbonate solution is given immediately after meals the salicylate is precipitated. Also, as shown with regard to its action on artificial pepsin digestion, a small part is likely decomposed, and slightly interferes with digestion. Then, in time, along with chyme, it will enter the duodenum, be redissolved, and again slightly interfere with digestion and be absorbed from there. If given one hour before meals, when the stomach is alkaline, and be given in bicarbonate solution containing twenty or more grains of the bicarbonate, it probably would be in large part absorbed from the stomach. Given at this time it would not interfere with digestion, but might slightly irritate the mucous membrane, as it has been shown the alkaline solution acts upon organic substances. If only a few grains of bicarbonate were given with it, the alkali might stimulate acid secretion, and hence hinder absorption. If given one hour before meals in pill form, with twenty or more minims of dilute hydrochloric acid, it is probable that a small portion would act on the mucous membrane, coagulating the mucin, etc., and that the larger part would remain undissolved, and in a short time pass into the duodenum, where it probably would not be dissolved so rapidly as it would during duodenal digestion, when there is present a large quantity of alkaline liquid. At this time it would not derange duodenal digestion, but it would likely slightly irritate the mucous membrane, and it would be absorbed more slowly than during digestion, on account of its slow solution.

To determine the relation of an acid and alkaline living mucous membrane to the absorption of the salicylate and bichloride, four dogs were narcotized, and the pylorus securely closed by double ligature, after which there were pumped through the œsophagus into the stomachs of two six ounces of water containing one per cent. hydrochloric acid, U. S. P., and into the stomachs of the other two six ounces of water containing five per cent. bicarbonate of sodium. Then, with hypodermic syringe, 2 grains of the salicylate were injected into an acid and an alkaline stomach; ¼ grain of bichloride was injected into the others. My intention was to keep the stomachs respectively acid and alkaline for twelve hours, then test the urine for mercury, collecting the urine by ligating the urethra and aspirating the bladder. As the salicylate and its albuminate are both insoluble in acid, hence it would not appear in the urine; but as the salicylate and its albuminate are both soluble in alkalies, from the alkaline stomach it would be absorbed and appear in the urine. As the bichloride is soluble in the acid and its albuminate insoluble, it is probable that a part of the bichloride would escape conversion into the albuminate, and hence appear in the urine, while the albuminate would remain unab-

sorbed; but as the bichloride is precipitated by alkalies, in the alkaline stomach, if there was much albuminous material, as in gastric catarrh, or where albumen has been introduced, the albuminate formed would be absorbed, while any oxide unconverted into albuminate would remain insoluble. But I was interrupted, and could not keep the proper reaction of the contents of the stomachs, hence I cannot at present speak positively on the conditions for their absorption. When placed in the subcutaneous cellular tissue, it appears to cause less pain than the bichloride, and is less liable to produce abscesses than the albuminate. When muriate of cocaine is added to the solution to relieve the pain, chemical change occurs, hence muriate of cocaine is incompatible with it.

Elimination-Contact Actions.

It would seem that these would be the same for all compounds of mercury, if mercury circulates in the blood as the albuminate. But if the salicylate circulates as the salicylate, and the bichloride as the bichloride, at least a part, it would appear that the degree of irritation during elimination would not be the same. It would seem that the nascent chlorine liberated in the gland-cells would be more destructive than salicyl or other organic radicals. Also, as the salicylate contains about sixty per cent., and the bichloride about seventy-five per cent. mercury, the bichloride can make only about fifteen per cent. more albuminate when each is completely converted. Hence, if they both form albuminates, the difference in the dose should be very slight, instead of the salicylate being thirty-two times as large. It might be supposed that the reason the dose of salicylate is so large is because only a part of it is converted into the albuminate, but if it is not, it is far less liable to pass through the intestinal canal unabsorbed than the less diffusible albuminate, hence it will enter the blood as salicylate, and if there converted into the same albuminate as the bichloride, there would be many times as much albuminate in the circulation as there is when $\frac{1}{32}$ grain of bichloride is given t. i. d.: hence 1 grain of the salicylate t. i. d. ought to produce grave toxic symptoms in a short time. But it does not. Then, do they both circulate as albuminates?

Experiments on persons in health and disease show that the salicylate does not salivate so easily as the bichloride, hence it suggests the possibility that they do not circulate as the same salt.

Bartholow and Ringer speak highly of mercury in acute tonsillitis and parotitis. If it is of any service in these inflammations, aside from reducing arterial tension by purgation, it is very likely by elimination-contact action. If such an action is desired, the bichloride is probably the better. This does not apply to intestinal antisepsis, for it seems likely that the salicylate there can accomplish by first-contact what the bichloride does by elimination. But when there is desired an action on the salivary glands, the tonsils, and the neighboring structures of the buccal cavity, the bichloride will probably have a more prompt and certain action, as is evidenced by its power to salivate.

In the treatment of syphilis with mercury, it is possible that considerable of the morbid material rendered soluble is excreted into the intestinal canal, and that, by remaining there an undue time, it would be reabsorbed, hence the importance of keeping the bowels moving at least daily. It is also probable that when large quantities of water are ingested the increased blood-pressure and increased solution of the products will hasten the removal from the tissues, and from the blood of the morbid materials, along with the greatly-increased excretion of water. The mercury excreted with the urine retards its putrefaction. The urine of three patients, each of whom were taking three grains daily, was not putrid after four days at a temperature of about 70° F.

Circulation-Contact Actions.

The action of salicylate on healthy, inflammatory, and syphilitic structures is probably about the same as that of the other salts, except that it is much less active, for the reason that it does not readily form new compounds with organic compounds. For this reason, when the stomach is vigorous, and is not deranged too much by the bichloride, it is very likely the best and most effective preparation to exhibit. But when the stomach is weak to begin with, or when bichloride or iodide of mercury has so deranged it that there is loss of appetite and the patient is getting worse, then these salts must be suspended. It is in such cases as this that the salicylate, though much less active, may render valuable service. When the patient cannot eat, it is useless to continue the bichloride, for it will not only make the appetite still worse, but the nutrition will be so deranged, the vitality of the cells will be so reduced, that after the mercury reaches the morbid process, the cells will not have sufficient power of metabolism

and elimination to be benefited by it. In such cases the salicylate is more convenient, and usually more agreeable to the patient than is resort to hypodermic injection.

In conclusion it may be said that—

1. Because the salicylate is likely not absorbed from an acid membrane, it will usually produce less derangement of the stomach than the bichloride.

2. Because the mercury is combined with an organic radical, it will produce less irritation during both first- and elimination-contact actions than the bichloride.

3. Because the salicylate contains less mercury and acts slower than the bichloride, it has less action on albumen and on bacteria of putrefaction and far less on digestion.

4. Because the salicylate passes through the stomach to the duodenum and there is dissolved, it appears that exhibited with hydrochloric acid it would be better adapted for an intestinal antiseptic than the bichloride, which probably is dependent mainly on its elimination-contact action in the intestinal canal.

5. Because the mercury is combined with an organic radical, it should not be prescribed with mineral salts of the heavy metals.

6. Because iodide of potassium given with it converts it into the biniodide, the salicylate should not be exhibited at the same time, unless it be in small doses.

7. Because the salicylate is insoluble in acids it should not be prescribed with drugs requiring an acid menstruum for solution.

8. Because chemical change occurs when combined with muriate of cocaine, they should not be given together.

9. Because the bichloride is probably more active and effective in syphilis, it probably is the best when it agrees.

10. Because the bichloride has such marked elimination-contact action, it is the better when such action is desired, as in acute tonsillitis, parotitis, etc.

168 South Halsted Street.

BRAIN WOUNDS, WITH EXCESSIVE LOSS OF STRUCTURE.

By G. Archie Stockwell, M.D., F.Z.S.,
Port Huron, Michigan.

REFERRING to injuries of the head, the venerable Hennen remarks: "The young surgeon who for the first time witnesses wounds of this description will at every step have something to *un*learn. He will find symptoms complicated, contradictory, and insufficient to give any rational clew to their causes; diagnostics, of the truth of which he had read himself into conviction, totally unsupported by the results of practice; and the symptoms he was led to look for as infallible accompaniments of certain states of disease, so often wanting altogether, that he will be inclined to relinquish the hope of ever arriving at a correct theory. At least he will enter the clinical ward with the pride of science considerably reduced." Certainly no one can come in contact with cases of brain wounds, or read Mr. Hennen's admirable reports, without realizing the accuracy of his observations.

Critical examination of the human cranium reveals it a citadel,—so to speak,—carefully walled about, and fortified for the protection of its contents,—the organ of intelligence and will. The very points that, to the superficial observer, appear most vulnerable, on closer and more careful inspection, prove to be built up and buttressed—here with an arch, there a ridge, and again a prominence or angle—in most extraordinary manner, securing to the part a maximum of strength, with a minimum expenditure of material. Atop of this, the whole is covered with a movable *glacis*, as it were, the scalp, which is calculated to deflect assault, and turn the direct into an *in*direct blow. It is to these factors that the head is indebted for its great immunity from serious traumatisms as compared with other portions of the body.

Because it is held the seat of voluntary impulse, and the prompter of the various functions that collectively go to sustain the mysterious phenomena of Life, until within a decade (with few rare and notable exceptions) the brain received little attention from surgical pathologists and physiologists, and this little of most trifling and desultory nature. The theory of non-interference in extensive traumatic lesions of the cerebrum was carefully inculcated and persistently insisted upon; and even to-day the vast majority of medical men are found clinging to this most absurd *fetich*, for such it really is. It was (and yet is) generally believed, and taught, that the nervous system, including the contents of the cranial vault, is composed of structures so frail, minute, complex, and uncertain, as to be beyond the delicacy of the human hand or comprehension of the human intellect; and consequently unsafe, if not criminal, to med-

dle with, even in attempts to restore and further its functions. In other words, while it was deemed permissible to employ the trephine for the purpose of elevating depressed portions of bone, such constituted the fastigium of cerebral surgery, and was tabooed for all other purposes. And this, too, in the face of the fact that Celsus and others, more than a century before the Christian era, defined the symptoms of clot, abscess, compression, etc., and taught active and operative measures for their relief; that to-day mummies are found in Egypt with crania bearing marks of the trephine, manifestly applied with other views than the relief of fracture, while *bas-relievos* and mural sculptures depict the instrument in actual use. It was with the decline of *Mystical** knowledge that the arts and sciences, medicine included, degenerated and fell into decay; and the esotericisms inculcated, owing to prevailing ignorance and superstition, led the "Fathers" of the Church to locate the essence of Life within the cranial vault, thus in turn giving rise to the dogma that the brain is the seat of a special factor denominated the "Soul," to meddle with which, must needs be an unpardonable insult to Deity!

The difficulty the human race experiences, even in the higher walks of life and education, when attempts are made to override and rise superior to the superstitions of centuries, is well exemplified by the indifference with which occasional recoveries from severe cranial wounds with excessive loss of cerebral substance, has been regarded in the past. Such, instead of being deemed natural sequels of reparative processes and phenomena of life, worthy of study and fit to be fostered, were merely "wonderful," or "special dispensation" vouchsafed by a "beneficent Providence to its own glory and ends." No other conclusions appear to have been drawn: the lesson inculcated by Nature was studiously ignored, and all bowed to the miraculous, forgetting that most trite of Hellenic aphorisms, *Thaumata moris*,—"miracles for fools." And, at last, when a few bolder spirits ventured to suggest the nervous system might be equally tolerant with other tissues and organisms of the body, and equally amenable to reparative processes, they were assaulted on all sides, even from the pulpit, which threatened with the damnation of heresy. Happily, the age of reason and common sense is once more in the ascendant; propositions are no longer accepted without scrutiny and analysis; and it is safe to predict that the day is close at hand when the brain will be as freely amenable to surgical procedures as the abdomen, and that, too, with much smaller percentage of mortality.

Before the brain can become the seat of traumatic injury, its protecting walls must be penetrated. Hence we find three special phases of fracture,—viz., of the base; of the vault; or of both.

By the great majority of teachers and authors, fracture of the base of the skull is held necessarily and invariably *fatal*. This is the testimony of Erichsen, Wood, Cooper, Neudorfen, and a host of lesser lights, and is the more remarkable, in that it has been practically and repeatedly disproven, there being few well-appointed anatomical museums that cannot boast one or more crania with repaired basal fracture, occurring months or years prior to death, and that, too (where their history could be traced), with so little disturbance of vital functions as to escape recognition. Dr. Charles Nancrede* mentions two such specimens in the United States. Further than this the subject of basal fracture invites no special attention in this connection.

Fracture may involve the outer or the inner table, or both.

The relations to the brain of the former, as a special lesion, is secondary merely; but the latter two invite careful attention, and for all practical purposes may be considered as identical, and together.

Fractures of the inner table, or both tables, are attended almost invariably by extravasation of blood within the cranial vault, which may appear in various situations,—viz., between the *dura mater* and the skull; in the cavity of the *arachnoid;* within the *pia mater;* within the substance of the brain itself; and in the ventricles. Their relative frequence appears to be in the following order: 1, between the *dura* and osseous vault; 2, in the *pia mater*, and in the cerebral substance or the ventricles.

Extravasations into the cavity of the arachnoid, necessarily have their source in the vessels of the *pia mater*, in the superficial veins, or in the great sinuses; and rise, apparently, with equal facility from slight or severe wounds.

* See "Curiosities of Therapeutics" in THERAPEUTIC GAZETTE for August, October, and November, 1887.

* Ashurst, "International Cyclopædia of Surgery," vol. v. p. 37.

Those between the dura and the skull originate from small blood-vessels passing from the membrane to the vault, from the middle *meningeal*, and from the venous sinuses; and they may develop suddenly or gradually, or in greater or less amount, according to circumstances and surroundings.

Hemorrhages into the *pia*, into the ventricles, and within the brain substance, are invariably the result of infraction of cerebral continuity.

Coagula within the *arachnoid* and *pia mater*, are especially prone to cover considerable superficial areas, and those between the *dura* and osseous vault, to speedily take on decomposition, whereby are developed grave cerebral and meningeal complications that frequently result fatally. Thrombus and pyæmia are by no means uncommon sequels to such instances.

The prognosis of effusion or hemorrhage of the first-named class—within the *arachnoid* and *pia*—is always grave, since if death does not speedily follow, the attending symptoms,—such as migraine, epilepsy, insanity, paralysis, etc.,—render life a burden to sufferer and friends alike; and though it is sometimes claimed that absorption may, and does, take place within the *arachnoid*, no definite case has ever been cited, and the physiological relations are obviously inimical to such process. Extravasations beneath the skull and within the *arachnoid*, however, have repeatedly been made amenable to surgical procedures, and that, too, with little difficulty or danger: hence this portion of the subject may be dismissed, remarking only that the reasons for ignoring hemorrhage and coagula within the brain and ventricles, are as invalid as those that demand non-interference with like accumulations upon the surface of the cerebrum or within the *arachnoid*.

As a sequel to traumatism with fracture and extravasation, conditions may obtain within the cerebral substance as follows: 1. *Concussion;* 2. *Contusion;* 3. *Compression;* 4. *Pachymeningitis;* 5. *Leptomeningitis;* 6. *Intra-dural suppuration;* 7. *Encephalitis;* 8. *Abscess;* 9. *Pyæmia;* and 10. *Hernia cerebri*.

Concussion, unaccompanied by hemorrhage, is the natural sequence of injury or infraction of cerebral substance or the meninges.

Contusion expresses a condition resultant upon rupture of blood-vessels, or laceration of the more minute and microscopical brain elements.

Compression follows effusion of sanguineous material, depressed portion or portions of the comminuted or punctured vault, entrance of foreign substances, and hyperæmia, or exudation.

Pachymeningitis designates chronic and local inflammation of the *dura*, resulting, secondarily in thickening and new cell formation, that, if not interfered with, is ultimately followed by necrosis of the osseous vault.

Leptomeningitis describes a subacute inflammation of the *arachnoid* and *pia mater* arising from irritation.

Intra-dural suppuration most commonly occurs as the sequel of putrescent coagula, necrosed bone, or other irritating and foreign agencies.

Traumatic *encephalitis* may follow concussion or laceration, either with or without bone spiculæ and deposit of extraneous matter.

Abscess, *pyæmia*, and *hernia cerebri* are secondary factors, and of connective and subjective importance only.

The direct complications of cranial fracture, however, are *encephalitis* from injury to cerebral substance, and *intercranial hemorrhages*.

From exhaustive and carefully compiled statistics, prepared by Dr. Wharton, it is a simple matter to formulate the percentage of fatality accruing to the different (regional) classes of perforating injuries of the cranium, viz.:

Orbital, $\frac{17}{18}$, or 94 per cent.
Sphenoidal, $\frac{4}{5}$, or 80 per cent.
Occipital, $\frac{2}{3}$, or $66\frac{2}{3}$ per cent.
Parietal, $\frac{1}{2}$, or 50 per cent.
Frontal, $\frac{3}{7}$, or 43 per cent.
Temporal, $\frac{2}{5}$, or 40 per cent.

Certainly, this showing is the reverse of satisfactory, and not at all creditable to surgical science in this nineteenth century, since it proves that, under present popular methods of therapeutics, the death-rate from cranial injuries, taken as a whole, is approximately *sixty-six and two-thirds* per cent.

On examining these and other available statistics more critically, it will be discovered the subdiploëtic or dural surface of the cranial vault, invariably suffers most, in consonance with the well-known philosophical axiom, "Injury follows the line of *extension* rather than that of *compression*."

When collapse ending in dissolution does not speedily succeed fracture, the feasibility of surgical interference, and of operation for the relief of compression, must be considered; and from experience through experiments conducted upon lower animals in connection with

intra-dural inoculations, and the artificial and voluntary production of congestion and suppuration, it is evident, in the great majority of instances, that resort to the knife, following the trephine, is not only justifiable, but imperatively demanded, *even to penetrating the cortical substance of the brain, and evacuation of its ventricles.* This is rendered more easy and simple by reason of cerebral localization, for it has recently been demonstrated beyond cavil and dispute, that the cerebral cortex is functionally differentiated into a number of centres, each more or less independent of the others. When we have brain lesion, by observation of the function or functions affected, it is possible to locate with a definite degree of certainty the seat of injury. There yet remains, however, some differences of opinion as to the exact seat of the various motor and sensory areas, the latest views being those of Feirrer, which are herewith subjoined as given by A. Pierce Gould :*

"The cortex of the anterior two-thirds of the frontal lobe of the brain, that corresponds to the frontal bone, is *not* the centre for any voluntary motion or of perceptive sensation, but is probably concerned with the higher mental function only." †

"The region of the brain bounded by the fissure of Rolando, including the posterior extremities of the three horizontal frontal convolutions, the whole of the descending frontal and ascending parietal, and the parietal lobule, together with the inner surface of the marginal convolution, is the motor area which is further divided up into special centres."‡

"The temporo-sphenoidal lobe, with the supra-marginal and angular gyri, are the seats of perception of the spinal centres.

The part of the motor area adjacent to the great longitudinal fissure, is the centre for the movements of the legs ; and the lower part of this area is the centre for the arms ; and the part in front of the lower extremity of the fissure of Rolando (that part of the area in front of the ear) is the centre for the face.

The mesial surface of the marginal convolutions, is the centre for the trunk muscles, the anterior part representing the neck, the middle part the shoulders, and the hinder part the centre for the lower muscles of the trunk.

The superior temporo-sphenoidal convolution has been shown to be the centre for hearing." *

With regard to lesions of cranial nerves, it may be well to recall a few facts in this connection :

1. Loss of smell is evidence of injury to the *olfactory* nerve, though not necessarily at its source, and care should be taken to discover if the nasal fossæ is clear and not obstructed by blood clots, displaced bone, or cartilage.

2. Injury to the sources of the *third* pair may affect only a portion of the course of the nerve or nerves, procuring but partial and limited paralysis.

3. Paralysis of the superior oblique muscle, causing diplopia below the horizontal meridian, and internal strabismus, with the eyeball directed downward, if not due to disease of the muscle tendon, is almost sure to be derived from the centre of the *fourth* nerve.

4. While the *fifth* nerve is rarely alone involved, when affected,—especially if partial, and the lesion circumscribed,—usually results in sloughing of the cornea.

5. Internal strabismus without muscular paralysis (the external *rectus* excepted) commonly refers to involvement of the primitive area of the *sixth* nerve.

6. The source of the *seventh* is most frequently involved in lesions of the brain, especially where laceration is present as a sequel to fracture ; and the evidences of facial paralysis that supervene are unmistakable.

7. The *eighth* and *ninth* nerves are rarely affected by traumatism ; but dysphagia, dyspnœa, with slow respiration and altered rhythm of the heart's action, palsied tongue, and anæsthesia of pharynx and base of tongue, are evidences of such lesion.

If evidences of compression are continuous and urgent, as manifested by unconsciousness, stertorous breathing, dilated pupils, and motor paralysis, they may justly be attributed to *depressed bone*, or the introduction of some foreign substance from without ; but if appearing only after a lapse of some hours, they are undoubtedly sequels to *hemorrhage* ; if delayed for some days, *pus* is probably the disturbing factor. In either case, however, compression will be uniform owing to the adaptability of the cerebro-spinal fluid, and obedience to the law of dispersion of fluids, which everywhere maintain their equilibrium. Again, when the blood-vessels are largely deprived of their contents,

* Surgical Diagnosis, p. 84.

† This is doubtful. Observe case 3, in paper to succeed this.

‡ Surgical Applied Anatomy, p. 30.

* A. Pierce Gould, "Surgical Diagnosis," p. 90.

anæmia obtains with unconsciousness, and coma, and labored respiration; and when the *corpora quadrigemina* and *third pair* are involved, dilatation of the iris and paralysis are present.

In the great majority of cases, compression arises from extravasated blood or formation of purulent fluid, the latter frequently a sequel of the former; and, so far as can be determined from available statistics, at least six-tenths of the cases are due to the second-named cause.

Pursuing statistical evidence still further, it is found that pus accumulates between the dura mater and skull in *five* per cent. of the cases only; that in *twenty-five* per cent. compression is the sequel of suppurative meningitis; and in *seventy* per cent. develops as an abscess within the substance of the cerebrum itself.

Symptoms of purulent accumulation within and about the meninges occur, commonly, between the *sixth* and *twenty-fourth* days; but evidences of cerebral abscess are manifested only between the *fourteenth* and *twenty-fifth* days.*

When collections of pus manifest themselves within the *arachnoid*, in spite of contrary supposition, there is no authentic case (as already noted) where such accumulations have ever been absorbed; and further, it is a well-known fact that spontaneous evacuation of cerebral abscess is the greatest of surgical rarities. However, in a few isolated instances it must be admitted that pus, when collected near the surface, has succeeded in penetrating the obstructing barriers and securing outlet external to the skull; but even these few cases, with one or two notable exceptions, ultimately resulted disastrously. When the abscess is of the middle lobe, it is not impossible that it may penetrate and evacuate itself by way of the ear or mastoid cells; but such inculcate no lesson or example worthy of dependence, save that the brain is more tolerant than is generally supposed and taught, and that too early resort to trephine and knife is impossible where life is to be preserved.

The statistics of conservatism reveal a death-rate of no less than *seventy-four* per cent., which, by operative interference, has been reduced to *fifty-seven* per cent.;† and that, too, with the disadvantage, that in nearly every instance, surgical measures were delayed to (and even beyond) the last moment compatible with the smallest degree of safety. With this discrepancy of *seventeen* per cent. in favor of the knife and trephine, strange to say, we find the majority of surgeons, many of highest standing and rank, arrayed on the side of conservatism, expectancy, and the "possibilities of nature." *Per contra*, however, I am glad to record that Gross, Liddel, Roberts, and a few kindred and progressive spirits have entered the lists as supporters of Neudorfen.

Careful consideration of the facts in evidence reveal that surgery is constantly invoked for the relief and evacuation of purulent matters in the regions of the economy where the ratio of mortality has ever been in excess of that of brain maladies; therefore it behooves every practitioner, to inquire what anatomical or physiological peculiarities pertain to the nervous system, that it alone should be exempt from the skill of the surgeon. The day has long since fled when it was believed the ventricles were the "*apartments*" and the sinuses the "*emunctories* of the soul;" and,—in scientific circles at least,—the *fetich* no longer obtains that the brain is the seat of *all* organic life, and each of its fragmentary portions the definite derivation of a *vital* function. Note the history of cranial injuries, and the strenuous efforts put forth by Nature in attempts to relieve and repair,—efforts sometimes successful despite superstitions that forbade logical interference. Recall the experiments of Dalton and other physiologists, that conclusively demonstrate the brain is but one of many component parts that go to make up the economy, and the removal of entire lobes under certain conditions is not necessarily dangerous to life; that almost the whole of either the cerebrum, cerebellum, or medulla oblongata, may be sacrificed without fatality, and perhaps restored by processes of Nature.* With such evidence at the command of practitioner and student for the last quarter of a century, does it not appear as if medical science, so far as the cranial cavity and its contents are concerned, has been wilfully blind and stupid, not to say criminally negligent?

Searching the literature of the past, I find in numerous books and journals several examples among all classes of vertebrates, and a goodly number among mankind, wherein the cranial vault has been fractured and fissured in all conceivable localities, its walls broken down and comminuted, and large

* *Vide* Nancrede in "International Cyclopædia of Surgery" (Ashurst).

† *Vide* Neudorfen.

* See "Human Physiology," by J. C. Dalton.

portions removed—arteries torn and meninges ruptured—sinuses opened and ventricles entered—and even entire lobes of the brain destroyed,—yet recovery supervened, and the victims were enabled to resume their ordinary pursuits in life, apparently little or none the worse for the experience, save suffering due to wounds and shock.

Careful study of perforating injuries of the cranium involving the contents, whether the result of accident or experiment, reveals the *almost* axiom that, *The more severe and extended the injury* (within certain limits) *the greater the assurance of successful recovery!* That when the cranial walls are crushed and comminuted, and the brain subjected to extensive laceration,—when the force producing the injury has been sharp, abrupt, and incisive,—the prognosis in the main is favorable.

Why this is so, requires little explanation. It is because, in such instances, the cranium is not given an opportunity to distribute and equalize the force of the blow, and thus transmit through its substance—because the vibrations thereof are not permitted to involve parts of the brain remote from the seat of injury. It is this last that secures fatality to concussion and contusion, which are the most fatal of all the factors entering into cranial and intra-dural traumatism. Sharp instruments, quickly and forcibly applied, procure less degrees of concussion and comminution than dull and blunt weapons; while the latter, with deliberate, ponderous, and crushing blows, procure concussion and contusion by reason of slow momentum that sends the vibrations arising therefrom to remote portions of skull and brain. This is why sand-bags and bludgeons are invariably more fatal than edged weapons, and the stone more dangerous than the bullet.

The greater the extent of the perforating injury, then (within limits) the greater the chance of recovery, since opportunity is afforded for the free exit of lacerated, mangled, and inflammatory products, whereby is lessened the dangers of compression. A fragment or mere spicula of bone, has brought more than one unfortunate to the grave, and less than a drachm of pus has proven equally fatal; and it is in this avoidance of compression that is found the secret of the wonderful recuperative powers sometimes, nay, *frequently*, exhibited when the brain has been desperately (and apparently) hopelessly wounded. Corroborative of this last assertion I cite the following:

1. September 13th, 1848, Dr. Harlow, of Cavendish, Vermont, was called to see one Phineas P. Gage, who, while engaged in blasting upon a line of railway, had a tamping-iron—a species of crow-bar—driven completely through his head. This piece of iron or steel, thirteen and a fourth pounds weight, thirty-seven inches in length, and an average of one and a fourth inches diameter, entered by its pointed end just beneath the left zygoma, escaping through an opening at the vertex three and one-half inches in diameter, at the junction of the sagittal and coronal sutures. The parietal (both) and frontal bones suffered fracture, as did also the floor of the left orbit, and the left temporal portion of the sphenoid. Besides, the lateral sinus was opened, the optic nerve severed, and the eye forced out upon the cheek, and the left anterior lobe of the cerebrum traversed and almost wholly destroyed, considerable quantities of lacerated brain escaping on several occasions in connection with inflammatory products.*

In spite of the prognosis given, "*Inevitably fatal,*" a speedy and most excellent recovery was followed with no impairment of mental functions, nor evidence of injury other than scars left by wounds, and loss of vision in the left eye; and it is stated by Professor Bigelow, of Harvard Medical College, who was associated with Dr. Harlow in the case, that Gage was wont to vigorously and vociferously curse his physicians, because they did not perform the impossible feat of restoring sight to the injured optic. Twelve years later this man was seen and recognized on the streets of Valparaiso, Chili, where he followed the occupation of omnibus driver, by Dr. Henry Trevitt, of Cincinnati. Subsequently he removed to California, where he died in 1868 or 1869, when his skull came into possession of the Harvard medical museum, where it may now be seen. Strange to say, after a lapse of nearly or quite forty years, the lessons inculcated by this case have been almost universally unheeded, and the circumstance, oft quoted, regarded merely as a surgical rarity and curiosity.

* Further particulars of this case may be had from files of the *Boston Medical and Surgical Journal*,—viz., vol. xxxix. p. 389; vol. lxiii. p. 327; and vol. lxxx. p. 116. An account also appears in the *Am. Jour. of Med. Sciences* for July, 1850; and Bryant, Gross, and other surgical authors give it brief mention in their works.

(To be continued.)

CHANGE IN THE COLOR OF THE HAIR, FROM THE WHITE HAIR OF OLD AGE TO BLACK, PRODUCED BY JABORANDI.

By D. W. Prentiss, A.M., M.D., Washington, D. C.*

THE following case is reported, as adding another to the evidence that jaborandi will produce the effect mentioned under favorable circumstances:

Mrs. L., aged 72 years, suffering from Bright's disease, contracted kidney. Hair and eyebrows have been snow-white for twenty years. Suffered greatly from itching of the skin, due to the uræmia of the kidney-disease. Skin harsh and dry.

For this symptom fld. ext. of jaborandi was prescribed, with the effect of relieving the itching. It was taken in doses of 20 or 30 drops, several times a day, from October, 1886, to February, 1888.

During the fall of 1887 it was noticed by the nurse that the eyebrows were growing darker, and that the hair of the head was darker in patches. These patches and the eyebrows continued to become darker, until at the time of her death they were quite black, the black tufts on the head presenting a very curious appearance among the silver-white hair surrounding them.

In the *Phila. Med. Times* of July 2, 1881, I published a case entitled "Remarkable Change in the Color of the Hair from Light Blonde to Black in a Patient while under Treatment by Pilocarpine. Report of a Case of Pyelo-Nephritis, with unusually prolonged Anuria." This was a case of a lady, 25 years of age, and the drug was used to relieve the uræmic symptoms resulting from the anuria, which latter was extreme.

A record was kept of the amount of urine excreted, and this shows that on one occasion, from December 16 to December 23, a period of seven days, not a drop of urine was passed, and that from January 22, 1881, to February 2, eleven days, there was total anuria.

From January 22 to February 11 (twenty-one days), but thirty-six grammes, or a little over two ounces of urine, were passed. During this time the catheter was used twice daily. The uræmic symptoms were very marked and distressing, consisting of dry skin, continual vomiting, severe headache, insomnia, muscular twitchings, confusion of vision, delirium, and threatened convulsions. Hot baths and hot packs did not cause sweating, and gave no relief.

On December 16, 1880, treatment of pilocarpine hydrochlorate hypodermically was commenced, the dose given being 1 centigramme (gr. $\frac{1}{6}$). The effect of this was very prompt, and the sweating and salivation produced most profuse. The relief to the uræmic symptoms was complete, the patient falling into a quiet sleep as soon as the effect of the drug ceased, and sleeping all night, awaking in the morning bright and refreshed. The pilocarpine was thus used twenty-two times from December 16, 1880, to February 22, 1881, requiring thirty-five or forty centigrammes.

As the patient became accustomed to the medicine it was found necessary to give 2 centigrammes at a dose.

After February 22 she began to improve, and no more was required.

Change in Color of the Hair.—All her life up to November, 1880, the hair was a light blonde. Four specimens of the hair were sent to the editor of the *Phila. Med. Times*, with the report of the case, for his inspection, and were as follows:

"1. *November*, 1879.

"2. *November*, 1880.—Both the same color,—a light blonde, with tinge of yellow.

"3. *January* 12, 1881.—A chestnut brown; and—

"4. *May* 1, 1881.—Almost a pure black."

The growth of hair was also more vigorous, and individual hairs thicker.

I believed at the time, and still believe, that this change of color was caused by the pilocarpine. The lady is still at this date (March 10, 1889) under my observation. Her hair is now dark brown, having returned to that color from black. The full report of this case can be found in the *Phila. Med. Times* for July 2, 1881.

At the time the case was reported, the facts as stated were received with considerable incredulity, the editor of one well-known western medical journal openly refusing them credit. Others preferred the charge that the lady had formerly bleached her hair, and that when this was no longer possible her hair returned to its original color.

In reply to these "suggestions," I will only say that all the facts are known to scores of people at her home in Washington, D. C., and are entirely beyond question.

As illustrating the ubiquity of the daily press, and the ease with which all sorts of nostrums, valueless or otherwise, may be

* Professor of Materia Medica and Therapeutics, Columbian University, Medical Department.

brought into notice through the newspapers, and how easy it is to make such a matter profitable to the advertiser, I mention an incident in connection with the case just reported.

It seems that some enterprising newspaper man became cognizant of the case, and put a short notice in a New York daily paper, to the effect that a drug had been discovered that would turn white hair black, and make hair grow on bald heads, giving my name as being connected with the Smithsonian Institution.

This paragraph must have been extensively copied in newspapers both throughout this country and abroad. The first intimation I had of its existence was an avalanche of letters from all parts of the country wanting information, some offering money for the receipt, others enclosing money in advance, which latter, be it known, I at once returned.

One from London, England, enclosing the half of a two-dollar bill, with the information that the other half would be speedily forthcoming on receipt of the formula or medicine.

One from a hair-dresser, Geneva, Switzerland, offering to go in partnership and divide profits.

The majority of the inquiries were from gray heads, the remainder from victims of alopecia.

Another interesting example of newspaper enterprise was the publication about the time referred to, in a New York Sunday paper, of the case of the wife of a sea captain in France, representing that it was taken from a French journal of science.

The captain commanded a steamer plying between Marseilles and Alexandria. He had recently married a young wife,—a blonde.

The wife became sick with kidney-trouble, and during her husband's absence was sent to her home in the Province of Toulon, where she was treated by the use of pilocarpine, and recovered.

Subsequently she went to meet the husband upon his return from Alexandria. On the quay, when the captain came ashore, a dark-haired woman, with black eyebrows and a pronounced moustache, threw her arms around him, and claimed him for her husband.

He repelled her. Oh, no, his wife had beautiful blonde hair. He would have nothing to do with her.

She followed him to their home, but was denied admission. Finally, as a last resort, she brought suit in the court for recognition of her rights.

Then followed a detailed account of the lawsuit, names of court, judge, etc., being given.

The captain was finally convinced that she was his lawful wife, having been transformed by that nefarious drug pilocarpine.

Alas! for the correctness of this romance. I searched the files of the French journal in vain. The proceedings of the court in question knew nothing of the virtuous captain and his sad spouse.

I wrote to the editor of the New York Sunday paper for the name of the writer of the article, and received for reply that it was Dr. D., but he had gone to Chicago, and it was not known when he would return. To this date I have not found Dr. D.

ATROPINE AS A REMEDY FOR SHOCK.

By Frank C. Bressler, M.D., Baltimore, Md.

WHILE reading the numerous articles found in the Therapeutic Gazette for December, 1888, I was much pleased to see an abstract of a paper on "Shock," by Dr. Cheever.

I think the paper an admirable one, and one which brings forth hints only too often neglected by the medical man. The article bears reading and its prescripts remembering.

I, however, was much impressed by some of the suggestions found in the editorial comments which followed the article.

One of the first things in shock to be looked after is the amount of injury the patient has sustained, then the form of shock we have to contend with. For we know that one individual who may barely have had a scratch will have shock so profound that his life may be despaired of. Another may undergo a very trying operation, and show comparatively little shock as compared to the amount of injury done. This, then, brings us to the point,—namely, where is the seat of shock primarily seated?

We suppose it depends upon some molecular change in the nervous system, confined to the various centres situated in the medulla oblongata primarily; then involving the nervous system as a whole later on, and in proportion to amount of the degree of involvement depends the intensity of the shock. Hence we have mental and physical shock. The first form requires different treatment from the second,

as the first is not so very depressing to the centres. Again, not so lasting. Therefore kind words, cheerful friends, camphor, and nervines form the proper line of treatment. While the second requires stimulants which are more lasting in effects. In the editorial comment a good hint is thrown out,—namely, "to have a clear idea of the physiology of the process." It is stated that the central phenomena of all is "failure of circulation,"—*i.e.*, vaso-motor paralysis. This is true as far as it goes. It, however, refers to the vaso-motor nerves only, and in so doing it ignores one point in particular, and that is the central origin of shock.

I believe, from what little experience I have had in the treatment of shock, that its seat is in the medulla oblongata, and is dependent upon some molecular change, since shock involves the cardiac, respiratory, vaso-motor, secretory centres, etc., in every case, and in proportion to the depression of these centres do we have the intensity of shock. That such is the case I think stands to reason. If we carefully investigate the physiological action of the remedies applicable to the treatment of shock, atropine would stand first, and ought to be the remedy *par excellence*.

It behooves us, then, in the treatment of shock, to watch these centres and apply our remedies accordingly, and in this connection I would like to refer to a case which I treated with happy results by atropine. This supports the editorial opinion advanced as regards the value of atropine in shock.

Mrs. P., æt. 56, American, of a nervous disposition, was taken one morning at five o'clock with dyspnœa. I was called, and, after examining her chest, found nothing in particular the matter. Knowing her to be hysterical, I gave her some fld. ext. valerian., ℥i, every two hours, in water. About two hours later I was again called, and told to come immediately, as she was dying. Upon my arrival I was dumfounded at the change that had taken place in her. Skin icy, and covered by a clammy sweat. Hands, forehead, nose, lips, and feet pale and cold as ice. Mouth wide open and gasping for breath, so that we opened all doors and windows. Some little cough; respiration slowed and shallow; pulse soft, but fair in proportion of intensity of case; pupils moderately dilated; countenance anxious, and face pinched; in short, all the symptoms of a well-marked case of apparent internal hemorrhage were present with resultant collapse. I immediately had her wrapped in a woollen blanket, hot bottles applied to her extremities, feet and hands rubbed moderately severely until the friction had warmed them. Brandy was injected by hypodermic syringe, also by mouth. No improvement was noticed. I sent to several drug-stores, and ordered ammon. carbonate, gr. v, spt. etheris comp., ♏xv, to be injected by hypodermic syringe, likewise gave it internally. Still no change. Breathing was becoming shallower. I now stopped these, and, thinking her case to result fatally, sent for all the members of her family and likewise for her spiritual adviser. All this occurred in about twenty-five minutes. Having some $\frac{1}{60}$ of gr. atropine sulph. tablets in my hypodermic case, I thought, now we will see whether atropine is the true respiratory stimulant, also whether it will stimulate the other centres in the immediate vicinity. I injected $\frac{1}{60}$ of a grain into her, waited about five minutes, and finding no change, I injected another $\frac{1}{60}$ of gr. About three minutes later her breathing began to get freer, pulse became fuller, and her condition much improved; in fact, atropine had acted like a charm. She now began to improve constantly, and by noon was pronounced out of danger. I am certain had I not given her atropine she would not have recovered, since no one can imagine how desperate her case was except those present. She improved rapidly, and was discharged from service on the third day.

This, then, seems to support my view that shock depends on the above-mentioned condition, and knowing the physiological action of atropine, also its *modus operandi* in this case, would lend support to the above opinion. From this we may draw the deduction that to treat shock we must apply such remedies as will act on these centres.

In this connection I might say that strychnine might prove useful if failure of respiration is predominating.

The suggestion that injections of digitalis might prove of avail is a good one. I have used it with good effect, but the objections to its general use is the difficulty of getting a standard preparation. Since some druggists make it themselves, others buy from different makers, hence different effects. Digitaline might be substituted for it, and is handy, since it may be obtained in tablet form.

Sometimes combinations of digitalis, atropine, nitro-glycerin, strophanthus, etc., act very well.

In conclusion to what has been said upon the treatment of shock, I would like to add a little more based upon experience. When-

ever an operation is to be undertaken, precede it by an injection of a small dose of morphine and atropine, since in small doses they are stimulants. Give that anæsthetic you have been accustomed to give. If shock is great, ether is preferred. If you use chloroform, nitrite of amyl added to it will tend to diminish its depressing effects. In other forms, independently of operations, injections of carbonate of ammonia combined with spt. etheris comp. Hot water, with a little milk, internally as often as deemed necessary, as it is handy and always to be obtained. Rectal injections of small quantities of hot water will also prove valuable. To these your atropine, digitalis, etc., as case indicates it.

In writing these few lines I claim nothing original. All that has been said was long ago known. I, however, wish simply to lend support as to the value of atropine in the case above reported, and likewise wish to draw attention to one point chiefly, and that is, be on your guard by watching the centres and support the failing ones.

1713 Bank Street.

TWO CASES OF OPIUM-POISONING IN YOUNG CHILDREN: RECOVERY.

By C. L. Dodge, M.D., Kingston, N. Y.

IN January, 1885, I was called to see an infant, 6 weeks old, who had been poisoned with valerianate of morphine. The mother told me, on my arrival, that the child had been very fretful for several days and seemed to have pain. She had given it gin, fennel-tea, etc., but it seemed to grow worse instead of better. She then remembered that she had one or two "powders" left that her family physician had given her for severe after-pains, and these, having given her so much relief, she thought she would give part of one to the baby. Not knowing the nature of the medicine, she assumed that half of one of the powders would be about right for the child. She accordingly administered this quantity to the infant about one o'clock. In a little over half an hour the child was thrown into spasms, and she sent for her regular family physician. He was out of town and the messenger returned without him. Not knowing the dangerous character of the medicine she had given, the mother waited till late in the afternoon for the return of her regular medical attendant. Upon his arrival the messenger informed him what the mother had given the baby, and he, being unable on account of a facial neuralgia to attend the case, requested me to do so. He told me that the powders he had given the mother for after-pains were valerianate of morphine, $\frac{1}{8}$ grain each. She had therefore given the child $\frac{1}{12}$ grain of valerianate of morphine. I arrived at the house about half-past six, and found the baby semi-comatose: skin cold and clammy; pulse slow, about 60 beats per minute; pupils contracted to the size of a pin's head. It was limp and motionless, neither cried nor moved, and could not hold up its head alone. By jumping it and slapping it we managed to make it keep its eyes open for a little while at a time, when it would immediately relapse into stupor. The spasms did not recur. The pupils were insensible to light. There was no vomiting or purging. So long a time having elapsed since the poison was taken, and, it being a small soluble powder, I deemed it useless to administer an emetic. The mother had given a little weak coffee, but it had great difficulty in swallowing; it seemed as if the child might stop breathing any minute. I applied mustard to its breast, legs, and feet, wrapped it up well in a flannel blanket, and kept it in motion, with only short intervals to rest, when I forced down its throat small spoonfuls of strong black coffee,—that is, coffee without milk or sugar. I continued my efforts in this way till eleven o'clock, when I left, with directions to continue in the same manner as long as the child could swallow the coffee. When I called next morning the baby appeared quite natural: its pupils were almost normal, its appetite had returned, and, in short, it made a perfect recovery. The mother informed me that they continued to administer the coffee and to jump the baby till twelve o'clock, when it fell asleep so soundly that it was impossible to wake it. It slept till morning, when it awoke with a cry, the first it had uttered since taking the morphine. I believe this is the largest amount of *morphine* (one-twelfth of a grain) ever recovered from by an infant of this age (six weeks). Young children are said to be peculiarly susceptible to the effects of opium. There are numerous cases on record where 4 or 5 drops of laudanum have caused death in children several months old. This amount of morphine represents about *thirteen drops* of laudanum, and, as no physician would think of giving over ½ a drop to an infant under six months of age, the magnitude of the dose becomes apparent. In those cases where large doses of laudanum have been taken with impunity by children (and adults as well) the strength

of the tincture of opium is always open to question. Powdered opium or morphine, of course, do not vary.

CASE II.—Last July I was called to see the only child of my next-door neighbor, a little girl, 2 years and 3 months of age. About six o'clock in the morning, while playing with a bottle of liniment, composed chiefly of laudanum, tincture of arnica, and alcohol, she swallowed some of the mixture. Just how much could not be ascertained, as some had been spilled. As soon as the mother discovered what the child had done, which was at least half an hour afterwards, she gave it a large dose of syrup of ipecac, which induced copious vomiting. When I saw the child, which was about half an hour later, she presented the usual signs of opium-poisoning. The face was pale, the skin cool, the pulse slow, the pupils strongly contracted, and the eyes had a dull, stupid, sleepy look. If left alone she would drop on the floor and fall asleep. It was with the utmost difficulty that we were able to keep her awake by walking around the house, slapping her on the back, etc. She also scratched her nose frequently, as though it itched. I immediately administered 8 drops of tincture of belladonna, and also gave her some strong black coffee. I repeated the draughts of coffee at short intervals till she had taken a large coffee-cupful. We walked her about the house and out of doors, in the mean time, till she was too tired to walk any farther, when we kept her awake by jumping her, trotting her on the knee, etc. It was with the greatest difficulty that we kept her awake till nine o'clock, when she began to grow better. The pupils now commenced to dilate, and the face and nearly the whole surface of the body was suddenly covered with the bright red efflorescence peculiar to belladonna. We kept her awake till twelve o'clock by talking to her and amusing her, after which I allowed her to go asleep. She slept nearly all the afternoon. The pulse and respiration being regular, I saw no reason for depriving the child of rest. When she awoke she appeared perfectly natural, the eruption had disappeared, and she ate her supper as usual. There were no further unpleasant symptoms. In this case it was obviously impossible to say how much laudanum had been taken, but the symptoms showed that a toxic dose had been swallowed.

I am unable to decide—in the second case—which remedy, the belladonna or the coffee, exerted the greater antidotal influence. Improvement took place immediately after the physiological effect of the belladonna manifested itself. Still, if I were restricted to the use of but one remedy I should prefer to depend upon coffee. However, there is no objection to using them together, as in this instance, and it is rational to believe that it is an advantage to do so.

REPORT OF CASES IN WHICH APOMORPHINE WAS USED.

BY T. OLIVER TAIT, M.D., ROCHESTER, NEW YORK.*

1. THE patient had taken, it was claimed, laudanum, ℥i. He was in a very stupid condition when brought in by patrol-wagon, having a heavy load of whiskey besides. He was given $\frac{1}{6}$ gr. apomorphine, and emesis followed in about three minutes. Recovery.

2. Man, who had taken a large quantity of laudanum, arsenic, and chloroform mixed. He was bound to die; was unconscious, pupils dilated, rapid pulse and respiration; was given apomorphine, gr. $\frac{1}{12}$. Free emesis followed in about one minute, and vomiting continued for several hours. He recovered completely in four days.

3. Patient brought in unconscious; pupils contracted; respiration slow and labored; history of having taken a quantity of laudanum and chloral. Gave three doses of apomorphine, each $\frac{1}{12}$ gr., with very little effect. Emesis was brought on, however, in about ten minutes. The patient died about three hours afterwards.

4. Patient with history of having taken carbolic acid, besides having a large quantity of whiskey in the stomach. Gave her apomorphine, gr. $\frac{1}{6}$. Emesis, very free, followed in four minutes. Washed out stomach with warm water, and followed by white of eggs. Patient made rapid recovery, was discharged in two days, but had a very sore stomach. Her urine revealed carbolic acid.

5. Patient brought in with extreme convulsions. He required six men to hold him down. I could get no history of the case from those around except that he was perfectly well three hours before, and that he was taken with a fainting fit, which resulted in convulsions. I was nonplussed, and gave morphine, gr. $\frac{1}{2}$, hypodermically. This quieted the man, but he acted as though his stomach was troubling him. So, ten minutes later I gave apomorphine, gr. $\frac{1}{6}$, with excellent re-

* Resident at Rochester City Hospital.

sult, but action was slow, about five minutes elapsing after giving it. Five hours later repeated morphine, gr. $\frac{1}{8}$, and the next day patient was quiet, but very sore. He eventually recovered.

6. Poisoning by "Rough on Rats." Apomorphine, gr. $\frac{1}{8}$, given. Free emesis followed in one and a half minutes. Patient died.

7. Another took "Rough on Rats." One hour after was given apomorphine, two doses, gr. $\frac{1}{8}$ each, with good result. Patient recovered in four days.

CLINICAL OBSERVATIONS ON MANZANILLO.

A paper on the clinical observations of manzanillo was read by DR. A. BETANCOURT at the Clinical Society of Havana, held November 9, 1888, of which the following is an abstract as reported by G. D'Archy Adams, M.D., in the *London Medical Recorder* for February, 1889:

Manzanillo is a tree growing near the mouths of rivers and coasts of the West Indies and the continent of America. It belongs to the natural order *Euphorbiaceæ*. All parts of the plant contain a milky juice, most abundant in the bark and fruit. It is said the Indians used this juice to poison their arrows. Applied to the skin it causes inflammation and blisters. Internally, in doses of 18 to 20 drops, it gives rise to a sensation of burning in the mouth and stomach, diarrhœa and choleraic vomiting, cramps, giddiness, profuse sweats, coldness of the extremities, emphysema of the head and face, syncope, and death. Alcohol is the best antidote. Medicinally it is given with honey, one part to three, 2 or 3 drops in milk. This dose has absolutely no taste, and produces generally ten or twelve actions of the bowels, without pain; 5 or 8 drops will cause from twenty-five to thirty actions, with colic and vomiting. In certain parts of Cuba it enjoys great repute as a remedy for tetanus. Dr. Betancourt reports three cases in full in which he gave it, in combination with chloral and other sedatives, apparently with advantage; in five other cases, which ended fatally, it answered well as a drastic, and notably modified the tetanic symptoms. In dropsy—dyscrasic, cardiac, renal, and hepatic—it is very useful. The author's experience here extends over fifty-seven cases. In conclusion, he says, "Manzanillo is a drastic purgative, having, moreover, a marked diuretic action, notwithstanding that it depresses the circulatory system. It is constant in its effects, tasteless, and in small doses causes no pain or nausea. Of its influence in tetanus, he is doubtful whether the reputation it enjoys is owing to its energy as a drastic purgative or to its depressant effects on the nervous system. It is certainly useful, and never fails as a purgative, and the smallness of the dose is also a recommendation. In cases of cardiac dropsy, in which it is often necessary to give hydragogue cathartics daily over a lengthened period, manzanillo is frequently better borne than any other drug." Dr. Betancourt has given it extensively for the last four years, and is very favorably impressed with its properties.

NUX VOMICA IN CARDIAC FAILURE.

In the *Lancet* for March 2, 1889, DR. A. BOWIE reports the case of a lady, aged 42, who had suffered more or less for three years with bronchitis and mitral stenosis. When Dr. Bowie was summoned to her side he found her with face pale and anxious, and lips livid; the breathing was short and rapid, and pulsation at the wrist could scarcely be felt; nausea and occasional vomiting of mucus were present, and there was dread of taking food or lying down. The condition had commenced ten hours previously with epigastric pain; but while the other symptoms had increased in severity, the pain seemed to have remained stationary. Dr. Bowie prescribed tincture of nux vomica in small doses every half-hour for four doses, then every hour, and there was rapid return to her normal condition. A second case was also reported of a gentleman, aged 49, who had suffered for some years with mitral-regurgitation and persistent though mild bronchitis. Exposure had produced an attack of left lobar pneumonia, which had been running the usual course until the fifth day, when a dense fog occurred in his district. When Dr. Bowie was called to him, he found his pulse weak, rapid, irregular, and easily compressible; the extremities were cold, with clammy perspiration all over his body, and beads of the same upon his livid countenance. He complained of intense pain over the apex of the heart, and the breathing was short and hurried. He had been taking digitalis for two days previously to the attack. This was at once stopped and the tincture of nux vomica substituted. The result was the patient rallied, and in twenty-four hours had lost his cardiac pain entirely.

The Therapeutic Gazette

EDITED BY
HORATIO C. WOOD, M.D.,
AND
ROBERT MEADE SMITH, M.D.,
PHILADELPHIA.

GEO. S. DAVIS,
Medical Publisher, Box 470,
DETROIT, MICH.
Philadelphia, 714 Filbert Street.

SUBSCRIPTION RATES FOR 1889.

(Journal increased to 72 pages.)

THERAPEUTIC GAZETTE (postage included).....$2.00
THERAPEUTIC GAZETTE with MEDICAL AGE..... 2.50
THERAPEUTIC GAZETTE with AMERICAN LANCET 3.25
THERAPEUTIC GAZETTE with AGE and LANCET... 4.00

Foreign subscriptions may be ordered through our agent in England, Mr. H. K. Lewis, Medical Publisher and Bookseller, 136 Gower Street, London. Price 10s. Remittances may be made either by Postal Order or Stamps.

Price to Foreign Subscribers direct (postage included) $2.50 (10 shillings). English postage stamps received on remittances.

Editorial communications should be addressed 1925 Chestnut Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively.

Business communications should be addressed to the Publishers.

Leading Articles.

CHRONIC ARSENICAL POISONING.

IN the *Boston Medical and Surgical Journal* for March 7 and 14 of the present year is an article by Dr. James J. Putnam, of Boston, who is already specially known to the profession for his valuable researches in chronic metallic poisoning, which suggests that in many regions of the United States there are occasionally cases occurring whose true nature ought to be made out, but is, in fact, not discovered.

In twenty-five years of practice in and haunting of hospitals in Philadelphia we have never seen a case of chronic arsenical poisoning diagnosed, except when the poisoning was due to the introduction of the metal by the mouth, and yet Dr. Putnam in the course of a comparatively short period has seen twenty-six cases of poisoning from the inhalation of emissions from arsenic wall-papers. If Massachusetts were the land of Erin, and green were the national color, patriotism evincing itself by verdant walls might in some way explain the discrepancy; but we know of no reason for supposing that the arsenical colors please the æsthetic eye of the Bostonian any more than they do the untutored mind of the Philadelphia savage, and we can perceive no grounds for believing that chronic arsenical poisoning is more frequent in one city than the other.

The suspicions excited by Dr. Putnam's paper are confirmed by our noticing in the *British Medical Journal* of March 19, 1889, that the occupants of two certain bedrooms constantly complained of headache, nausea, lassitude, and that the wall-paper was found to contain an exceptionally large quantity of arsenic, and recovery followed the changing of the paper.

Under these circumstances it becomes a matter of the gravest importance to make out if possible the characteristic symptoms of chronic arsenicalism, or at least to discover something which will serve to arouse suspicion when present in a chronic case of disease. Many years ago Kirchgasser called attention to a peculiar browning of the skin, especially of the face, as indicative of chronic arsenical poisoning, and the same writer asserts that a periodic recurrence of symptoms is frequently seen, suggesting the intermittence of malaria. Cerebral symptoms, such as vertigo, impairment of memory and mental endurance, and, rarely, epileptiform seizure, are met with in cases of chronic arsenical as in lead-poisoning, and may be suggestive if not characteristic, provided other causes can be excluded. Fever of low grade, albuminuria, with casts and sometimes blood in the sediment, are other symptoms which might arouse suspicion. We think, indeed, that in every case of acute albuminuria search should be made for the possible presence of arsenic in the urine, unless circumstances surrounding the case clearly point to some other cause. Putnam calls attention especially to neuritis of sufficiently advanced type to cause changes in the electrical reactions, diminution of cutaneous sensibility, and impairment of motor-power or co-ordination as especially indicative of arsenical poisoning.

Neuritis is, indeed, an affection which is so commonly dependent upon the presence of poison in the system that it should always cause a very careful search for the probable toxæmia. In the majority of cases it is due either to gout, rheumatism, lead, or arsenic; very rarely to syphilis. The symptoms of local irritation of the alimentary canal are also frequently present in arsenicalism. A symptom which was quite marked in some of Dr. Putnam's cases was swelling of the sublingual and submaxillary glands, evidently

connected with congestion of them, and accompanied by excessive salivation, increased by mastication. Nausea, diarrhœa, and abdominal pain are not rare symptoms. In some cases sore-throat, cough, general debility, feverishness, anæmia, obscure failure of health, and even glandular enlargement about the neck were the only manifestations produced by the poison which was sapping the vital strength. Periodic attacks of violent gastralgia seem to be not rare.

In the case of an infant reported by Dr. Putnam, refusal of food without apparent cause was the only symptom. In another instance a young lady became extremely anæmic, and suffered from repeated attacks of diarrhœa. In another case prostration, insomnia, and indigestion were almost the sole manifestations. In this case the peculiar silvery coat upon the tongue, said by some physicians to be almost characteristic of chronic arsenicalism, was well marked.

It is evident that there are no symptoms in chronic arsenicalism which are constant, and none which are absolutely characteristic. In this, as in other toxæmias, the thing which ought to excite suspicion and cause a very careful search is not the presence of this or that symptom, but the irregularity of the progress of the case, and the failure of the array of symptoms to conform to the type of any ordinary disease. The only safeguard for the practitioner in chronic diseases is a perpetual mental alertness, a habitual, thorough search into the surroundings of every patient who offers an obstinate irregular chronic disorder without obvious explanation.

In all of the cases reported by Dr. Putnam arsenic was found in the urine; and in any individual case the diagnosis must rest upon a chemical study of the urine. It is worthy of record that in one or more of the cases the source of the poison appears to have been paper on the walls which had been covered over by other paper,—another instance of the bad result of the filthy habit, so prevalent in America, of putting paper on paper upon walls in order to save the small expense of removing the old paper. The habit is comparable to stealing pennies off of dead men's eyes, or to the economy of a recently-deceased Philadelphia millionaire who always carried an envelope in his pocket in which to put the half-chewed cuds of tobacco to save for another time, so that he might get along upon the five cents a week which he allowed himself for tobacco.

The following, bearing upon the time at which the elimination of arsenic ceases after its ingestion, seems to us worthy of being copied in full from the paper of Dr. Putnam:

"Even Taylor ('On Poisons'), while asserting the general principle of rapid elimination, admits by inference that the process may be delayed if the eliminating organs are working as they should.

"1. Two cases have already been reported (Cases 6 and 8) where the elimination was apparently going on for seven to nine months after cessation of the exposure, though it must be admitted that this class of cases is not suitable for conclusively settling such a point. The steady improvement and eventual recovery of the patient seemed to indicate that the real cause had been found, but it is possible that absorption went on for a time from the accumulations in the air of the house, or in the form of dust.

"2. A similar case to these, with elimination continuing for three months, is given by Kjellberg.*

"3. A case of poisoning from medicinal doses is cited in a paper previously published by myself,† where the arsenic did not disappear from the urine for nearly fifty days.

"4. A case is reported above (Kirchgasser) showing that the fæces may contain arsenic after elimination by the kidney has ceased.

"5. The most important case is one given by Gibb in the 'Transactions of the Pathological Society of London,'‡ where traces of arsenic were found in the liver and bones six months after cessation of a long course of medicinal treatment which had led to paralysis and eventually to death.

"One reason, perhaps, that it has been so strongly asserted that arsenic does not accumulate is that it has been supposed that arsenic did not form definite compounds with the albuminoid tissues of the body. This view is, however, disproved by the recent experiments of Dogiel, the last series of which are reported in the 'Transactions of the International Congress at Copenhagen in 1884.'"

* "Hygeia," 1881, cited in Virchow, and Hirsch's, J. ber. 1882, l. 398.

† Boston Med. and Surg. Journal, 1888, vol. ii. p. 1.

‡ See the Boston Med. and Surg. Journal, 1888, vol. ii. p. 1.

BALSAM OF COPAIBA.

ACCORDING to the *Pharmaceutical Record* for March 18, 1889, the growing use of this oleo-resin in the arts has produced such a demand for it that the supply has not been able to keep pace with the increased call, and the price has advanced. This in turn has led to adulterations of the balsam, so that at present there is very little of it in the American market that is pure, as is strongly evinced by the fact that the ruling price in England is twenty per cent. greater than in this country, although the balsam comes to this country chiefly through England. It appears that in England, and more especially on the continent of Europe, it is largely adulterated with gurjun balsam, or wood oil, with oil of cedar, and often with such cheap stuff as rosin oil. Very frequently the three foreign substances of adulteration are used together with a little true balsam. This adulteration has gone so far that caution is necessary in the medicinal use of the balsam of copaiba unless it is procured from a thoroughly reliable apothecary.

INHALATION OF THE IODIDE OF MERCURY IN TUBERCULOSIS OF THE LUNGS.

ACCORDING to the *Pharmaceutische Post* for March 3, 1889, Miquel and Rueff have recently recommended the inhalation of the biniodide of mercury in tuberculosis, basing their opinions on a long series of careful observations made at the bedside. The result of this method of treatment, according to the authors, is a very satisfactory one,—often after its first administration the cough is reduced, and the expectoration, even in individuals with large cavities, becomes reduced in quantity and loses its offensive odor. As a result of its continued employment, it is claimed that night-sweats disappear and the general condition becomes improved, the body taking on weight. Their method of employment is to dissolve one part each of biniodide of mercury and iodide of potassium in one thousand parts of distilled water. This solution is employed in the form of a spray, at first only once daily, and later, when the patients have become accustomed to it, twice daily. If it is found that the irritation from inhalation is too excessive, the solution may be reduced one-half in strength without the result being affected, since it is claimed that this preparation of mercury will destroy bacteria in concentration of one to forty thousand. One of the chief conditions of success is to prolong the use of the treatment, which may be carried out for a year or more without evil effect to the patient. If we admit that phthisis is due to the presence and growth of a bacillus, the use of such a bacteriacide would be indicated on theoretical grounds, and, as the authors' experience seems to prove that its use may be persisted in without danger to the patient, it is certainly worthy of trial.

ANEMONE PULSATILLA IN THE TREATMENT OF GONORRHŒAL ORCHITIS.

IT is only in the last five or six years that internal treatment of gonorrhœal orchitis has been attempted, for, while quinine and general supporting treatment is the rule, it was only in 1882 that Dr. Henderson first recommended the internal use of salicylate of sodium in such cases, and in 1886 a report of twenty cases was published by M. Pigornet in which the internal administration of from forty-five to ninety grains daily of this drug is claimed to have led invariably to a successful result. Recently M. Dormand in his inaugural thesis (*Revue Générale de Clinique et de Thérapeutique*, March 7, 1889) has recommended in the strongest terms the employment of the tincture of anemone pulsatilla in the treatment of this affection. The use of this drug in orchitis is by no means novel. It was first used in America by Dr. Chambers, of Chicago; then in France by Martel, Cordier, and Bazy,—the latter of whom, according to Dr. Dormand, succeeded in rapidly curing thirty-five out of forty-eight cases, the pain disappearing from the first to the third day. Preference is given by Dr. Dormand to the tincture, which, sweetened with sugar or syrup, may be given in doses of 30 drops every two or three hours. Anemone pulsatilla is stated, in its action on the nervous system, to closely resemble aconitine, and it has been tested by Dr. Huchard in the treatment of various neuralgias in doses of from 30 to 60 drops; but the results so obtained have been so inconstant as to warrant no expression of any decided opinion. Dr. Curie has made a number of experiments to determine the physiological action of the glucoside of the anemone, and writes that in poisonous doses it produces general paralysis of voluntary motion without affecting the respiratory or circulatory functions or general sensibility. According to Bronevski, anemonin paralyzes the heart and respiratory centres, causing in the lower animals dyspnœa, paralysis, diarrhœa, and arrest of the heart. In doses of 4½ grains the glucoside has

been employed by Dr. Curie in the treatment of chorea with good results. The use of the alcoholic extract has been recommended by Vigier in the treatment of catarrh, and is stated to completely arrest nasal secretion. It should be recollected, in experimenting to determine the value of this drug, that anemone loses all active properties on drying, —and preparations, therefore, should be invariably made from the fresh plant, collected in the month of June.

CLINICAL NOTES OF SULPHONAL.

WE have already called attention to the fact that the indiscriminate use of sulphonal as a hypnotic, without fear of evil results, is not substantiated by facts. Dr. S. Grover Burnett (in the *New York Medical Journal*, March 2, 1889) publishes notes which further confirm these statements. He first experimented on himself, taking 30 grains, and, while sleep was produced in an hour and lasted for eleven hours, he awoke with dizziness, which passed away on rising; but he suffered from muscular weakness which lasted all day, his co-ordinating powers being quite defective. He has used it in sixteen cases of mental disease of various kinds, with good results in seventy-five per cent. of the number experimented upon, but in all cases of melancholia and one case of epileptic insanity the results were less satisfactory. In melancholia the dose had to be repeated during the night, and then only from two to four hours' sleep was obtained. To a patient with melancholia with great mental disturbance a dose of 30 grains was given at bedtime: the patient did not sleep, and the dose was repeated at 2 A.M.; patient then slept till 1 P.M. On waking, refused food and complained of nausea. Became restless at bedtime and the dose was repeated; slept all night, and was aroused with difficulty at 9 A.M. Was cyanotic; pulse 60, weak, and compressible; respiration 16, and laborious; temperature 98° F. Remained cyanotic and semi-comatose for twelve hours, taking no food. On the following day the temperature was normal, respiration 20, pulse 80, taken in same attitude. Patient is 59 years old, suffers from artero-sclerosis with compensatory cardiac hypertrophy, to which condition Dr. Burnett attributes the severity of the symptoms, and he thinks the patient would not have survived another dose within twenty-four hours.

To a lady, 42 years old, suffering from insomnia due to worry, 30 grains of sulphonal were given at bedtime for a week. It produced good sleep, but was followed each morning by anorexia, slight headache, and, on the fifth day, muscular inco-ordination. These symptoms gradually increased, becoming so severe on the seventh day that the medicine had to be discontinued. In three cases it produced extreme thirst, dry and parched condition of the mucous membrane of the mouth, partial suppression of the salivary secretions, anorexia, and in two cases pronounced emesis. Dr. Burnett believes that sulphonal is a reliable hypnotic in the various psychoses free from states of depression, such as mania, the maniacal stage of paresis, delusional insanity, etc., while it is less suitable for cases of melancholia with pronounced depression; is contraindicated in arterio-sclerosis concomitant to a psychosis. He believes that it is accumulative, producing a more profound effect after the third dose, six to twenty-four hours apart, and in a small number of cases produces disorder of the digestive secretions.

While the cases in which sulphonal has failed to produce the expected result, or has even been followed by unfortunate consequences, are rapidly multiplying, it is earnestly to be hoped that the drug will not on this account fall into disrepute. In our minds it is without doubt one of the best of hypnotics, but like all powerful agents cannot be used indiscriminately. In some cases its use is positively counter-indicated and in others it will fail; fortunately we are now beginning to recognize on clinical grounds the restrictions which should govern its use. Further, our acquaintance with its physiological action is becoming more intimate and has been considerably improved by the report of a number of experiments made by Dr. William F. Shick in the private laboratory of Dr. Ott as to the physiological action of sulphonal $(SO_2C_2H_5)_2$, from which the author draws the following conclusions (*Journal of Nervous and Mental Disease*, January, 1889):

1. It does not affect the irritability of the motor nerves.
2. It does not alter the muscle curve.
3. The sensory nerves are left intact.
4. It depresses reflex activity mainly by an action on Setschenow's centres; occasionally it exalts reflex excitability.
5. It acts as a narcotic.
6. The pulse is usually somewhat accelerated.

7. The arterial tension, after a temporary fall, is considerably increased.

8. Respiration is depressed; section of the vagi does not alter the effect.

These facts lead him to believe that sulphonal will replace chloral to a considerable extent. The well-known dangerous action of chloral as to heart and respiration is avoided with this drug, and, if the narcotic effects are equal, sulphonal should have the preference. While he has seen the heart paralyzed by the drug in a few minutes, yet it was due to the sudden action of the drug by the jugular and perhaps partly to some of the drug being thrown down on account of its insolubility, for the solution was somewhat warmer than the temperature of the blood.

Reports on Therapeutic Progress.

PROFESSOR VON BERGMANN'S CASE OF CEREBRAL ABSCESS.

In our January issue we published an account from our Berlin correspondent of Professor von Bergmann's case of cerebral abscess. The account of this case has excited considerable discussion in Berlin, and the following letter from the Berlin correspondent of the *Medical Press*, January 30, 1889, will probably prove of considerable interest to our readers. Herr Hartmann first gave some particulars regarding the case described before it passed under Herr von Bergmann's care. The principal symptom accompanying the purulent discharge was violent alternating headaches. Motor or sensory symptoms were not observed, but sluggish reaction and irregularity of the pupils were. The conclusion was strange to him (the speaker), however, that otiatry left them in the lurch in suppuration of the middle ear, that ear surgeons drive septic material inward by their syringing instead of outward. He was in agreement with English surgeons who had lately had the greatest success in operation with cerebral abscess, and who demanded that the tympanic cavity should be brought into a clean condition before operation. He did not believe otiatry would leave Herr von Bergmann in the lurch if he would call it in to his aid. Syringing out of the middle ear was general, and followed by the best results. He did not deny that the disease might be influenced unfavorably by syringing, but so long as such cases remained exceptions they did not furnish a reason for abstaining from the procedure.

Very reliable statistics as to results were furnished by Bezold. Of four hundred and forty-six cases of suppuration of the middle ear, cure with closure of the tympanum occurred in 2.3 per cent., permanent cure of the suppuration without reclosure in 54.1 per cent., traces of the suppuration remained in eleven per cent., twenty-three per cent. were seen only once or a few times, and 7.2 per cent. remained under treatment. A fatal result took place in seven cases, 1.6 per cent., and when four cases in which death was not in direct connection with the affection (phthisis, scarlatina) were deducted, there only remained .7 per cent. in which death was produced by the ear affection. Such was the position up to the present; when ear surgeons were shown a method of treatment that gave better results they would certainly be prepared to accept it.

Herr von Bergmann took his stand on the ground occupied by the previous speaker. Certainly several cases of cerebral abscess had already burst into the ventricles. This was easy to understand, for when they began to give rise to symptoms they progressed rapidly. Expectancy was here a dangerous thing. In the present case there could be no question of pus being driven inward, but notwithstanding, and although he was not in a position to offer anything better, he must say there were many objections to that mode of treatment, and above all when it was observed with how much energy the syringing out was undertaken. Various authors had previously uttered a warning against energetic syringing, but in spite of it he had seen it performed with such vehemence that he believed he ought not to keep silent respecting it. Surgeons looked upon syringing out in other regions as a misfortune; for example, the pleural cavity; and, as this was the case, it was only to be wished that ear surgeons would employ less force in their syringings. If a series of good results were obtained by syringing it would be no proof that the procedure was an indisputably good one. Syringing acted injuriously in all other wounds; in gunshot wounds, for example, it drove inflammatory products into the interstices that had not before suppurated, and gave rise to phlegmons in these cellular tissue spaces. It was, therefore, emphasized that the vessel should not be held too high, but that only a gentle stream should be allowed to flow into the wound.

Herr Küster had chiselled off the mastoid forty times in thirty-nine cases; of this num-

ber he had lost six, four of them from cerebral abscess. These cases, however, belonged to a period when people were not accustomed to attack cerebral abscess so early as at present. Two patients died of meningitis ; in one case, when the skull was opened, pus welled out between it and the dura mater. These unfavorable results must not be attributed to the operation, which was harmless in itself. According to his observation, it seemed advisable to undertake the chiselling of the mastoid early in those obstinate cases that did not yield to ordinary treatment, as it frequently enough cured the disease. Two groups of cases must be distinguished,—viz., those in which the disease was primarily located in the mastoid, and spread to the ear, and those in which it was secondary to disease in the ear. The greater number of cases of cholesteatomata belonged to the first group: he had observed seven such cases; when these were freed, removed by scraping, and tamponed, the suppuration at once ceased. Further, the cases of primary tuberculosis of the mastoid belonged to this group. When the caseous centre was removed healing took place. A third affection was primary osteomyelitis of the mastoid process, for as no bone in the skeleton was safe from attack, it was only natural that this might be the seat of the disease.

As regarded the second group of cases, too long waiting was not demanded. When rational treatment was carried out for weeks, and the discharge did not lose its fetid character, it was necessary to proceed to operation. He had proposed a double operation, according as the ossicles still remained with perforation, or the tympanum was completely destroyed. In the latter case no regard need be paid to hearing ; it might be looked upon as lost. In such cases, therefore, he chiselled into the middle ear, and inserted a drainage-tube, one end of which passed out through the external ear. In this way pus was prevented from collecting, and healing promptly took place. In those cases, on the other hand, in which the tympanum and ossicles were retained, one would content one's self with chiselling away the bony canal from within outward, from the tympanum, and inserting a drainage-tube. The cleansing is not then so complete, but it is possible to syringe out without using much force. He had been quite contented with the results, and he would, therefore, in closing, say decidedly that early chiselling of the mastoid was much to be recommended.

THE CURATIVE TREATMENT OF CYSTITIS IN WOMEN.

In a paper published in the *British Medical Journal*, March 2, 1889, Dr. Thomas More Madden calls attention to the fact that cystitis in women is more frequently met with than is generally believed, and is most intractable to the methods generally relied on for its relief ; and since he states that in the past year twenty-eight cases of this affection have come under his care, and that in nearly every one of these cases the patient was discharged free from disease, which in some of them had resisted years of other treatment, this fact renders his remarks worthy of notice. As regards the cause of cystitis in the female, he found that it frequently occurs as a complication or consequence of vulvar or vaginal inflammatory conditions, especially when they are of gonorrhœal origin ; or it may be due to mechanical causes, uterine flexions or displacements, and fibromata. Occasionally it results from the extension of the renal disease or from the irritation of gravel or calculi, as well as from cold, local injuries, reflex irritation, or simply from long delay in emptying the bladder. In the treatment of these cases it is obvious that the first care should be to ascertain and remove, if possible, the exciting cause of the morbid condition of the bladder. Thus, if the disease be dependent on extension of vulvar or vaginal inflammation, either gonorrhœal or non-specific, this must be at once allayed by appropriate treatment. If the cystitis be due to the mechanical pressure of a displaced uterus, this should be rectified by a suitable pessary. In the same way the weight of a uterine fibroid pressing on the bladder, if it cannot be otherwise got rid of, must be at least lifted well above the pelvic brim, and there maintained. If vesical calculus be present, or if, as should be ascertained by careful examination of the urine, renal disease exists, and has extended from the kidneys along the ureters, it will be useless to attempt the topical treatment of the consequent cystitis until in either instance its cause has been removed.

Should, however, the case be one of uncomplicated cystitis, some of the numerous palliative expedients are unquestionably of value, and may even prove curative in exceptionally mild cases of the disease. Of these the most generally useful in this way are long-continued warm baths, washing out the bladder through a double catheter with plain warm water, thin flaxseed-tea, or a solution of boro-glyceride ; conjointly in all in-

stances with absolute rest in bed, the free use of diluents, together with the administration of the old-fashioned Dover's powder in small, frequently-repeated doses as the best opiate in these cases; and, lastly, above all, by the use of boracic acid in 10- or 13-grain doses three or four times a day, by which the generally fetid ammoniacal urine is deprived of its fætor and rendered less irritating to the endo-vesical mucous membrane.

While these measures may relieve, they will not cure well-established cystitis. This can only be attained by giving the diseased lining membrane of the bladder and its submucous muscular walls absolute physiological rest. This may be secured in either of two ways,—namely, first, by that advocated by Dr. Emmet on the suggestion of the late Dr. Marion Sims, which consists in the formation of an artificial vesico-vaginal fistula through which the urine may drain away as fast as secreted, and by the consequent removal of the immediate source of irritation to the unhealthy and hyperæsthetic endo-vesical mucous membrane thus affords the patient a fair chance of escape from ultimate extension of the disease to the kidneys. The objections to this plan of treatment are, however, so grave as to render any rational alternative that may be suggested for attaining the same object by less heroic means deserving of fair consideration and full trial. These objections are: first, the general difficulty of keeping the fistulous opening patulous for a sufficient time to allow the diseased bladder to regain its normal condition; secondly, the irritation often occasioned by the button commonly employed for this purpose; and, thirdly, the more serious trouble, which we meet with in some exceptional instances, of closing the fistulous opening when the desired object has been attained, and the consequent misery resulting from this mischance, by which the patient's last condition may thus possibly be rendered worse than her former state.

For these reasons Dr. Madden has abandoned this operation, and believes that we may obtain its advantages more easily and more safely simply by so thoroughly dilating the urethral canal as to enable one to pass the index-finger into the bladder, and paralyzing the contractility of the sphincter for a time. In some instances it may be advisable to remove the proliferating vesical mucous membrane by the cautious employment of a dull wire curette, while the topical application of carbolic acid to the mucous surface should be combined with dilatation. The carbolic-acid should be employed in the form of glycerin of carbolic acid, which is quite strong enough for the purpose, introduced by an ordinary stilette, armed with a piece of absorbent cotton saturated in the application, and passed through a dilator so as to avoid any of the acid being brushed off in the canal until it reaches the fundus vesicæ, where it should be retained for a couple of minutes until every part of the vesical wall contracts. The urethral canal is then to be similarly brushed out by another application of the carbolized glycerin. The pain caused by the procedure may be prevented by previously introducing in the same way a ten per cent. solution of cocaine. Dr. Madden states that this plan of treatment seldom requires to be repeated more than two or three times, at intervals of a week, to cure the most aggravated cases of cystitis in women.

A NEW STUDY OF LOBAR PNEUMONIA, WITH DEDUCTIONS FROM AN ANALYSIS OF FIFTY-SIX FATAL CASES.

At the meeting of the New York Academy of Medicine, held December 20, 1888, Dr. Thomas E. Satterthwaite read a paper with the above title, of which the following is an abstract as published by the *Medical and Surgical Reporter*. Epidemic pneumonia, according to the author, does not prevail to any great extent at the present time, yet a certain number of facts sustain the theory that the disease is occasionally epidemic.

His paper treated of lobar pneumonia in its primary and secondary forms; the first form he called acute lobar pneumonia, and the other, secondary pneumonia. But to avoid obscurity he mentioned the principal types of pneumonia, which are acute lobar pneumonia, secondary lobar pneumonia, embolic lobar pneumonia, bronchial lobular pneumonia, and the interstitial pneumonia of heart-disease. Acute lobar or croupous pneumonia is the most common form. In one hundred fatal cases, taken from his hospital and private records, the several varieties were represented as follows: Acute lobar, thirty-six per cent.; secondary lobar, nineteen per cent.; bronchial lobular, twenty per cent.; interstitial of heart-disease, seven per cent. He has found it most common in males. It is for the most part a disease of middle life, and occurs almost altogether in northern and middle altitudes. When it originates in one lung it usually selects the right, and in his cases commenced in a lower lobe. In the stage of engorgement the whole lung tissue is

increased in volume, infiltrated with a serous fluid, with more or less transudation of blood from the vessels. In the second stage, or stage of red hepatization, the lung is of a deep red color, unyielding to the touch, and difficult to distinguish from an inflamed liver. It contains little if any air, and almost no fluid. Its cut surface has a granular and dull aspect, each speck corresponding to an air-vesicle or cut bronchiole filled with a firm pellet consisting of blood-cells and epithelium mixed with fibrin, which hold all firmly together. In the third stage, that of gray hepatization, the reddish tint yields to a dirty gray, at first tinged with brown, and then with yellow; the tissue is softer, and on pressure exudes a small amount of fluid; the walls of the blood-vessels are studded with leucocytes; in many cases there is dark pigmentation of the interlobular spaces. The lung may weigh sixty ounces.

In Dr. Satterthwaite's experience the order of the symptoms is as follows: 1, pain, prostration, and cough; 2, a severe chill; 3, nausea; 4, rise of temperature. Chilly sensations may take the place of a severe chill. Within a few hours the temperature commonly reaches 103° or 104° F. An early sign, though seldom the earliest, is fine crepitation, heard only during inspiration. Occasionally this sign lasts the full course of the disease. As soon as the second stage begins there is dulness on percussion, with bronchial breathing and bronchophony, and also increased vocal fremitus. In the fourth stage, that of resolution, returning crepitant râle is heard. The author is inclined to think that the locality of the affection, whether in the upper or lower lobe, does not influence the production of cough or affect its character. In old people cough may be absent. The expectoration is peculiarly tenacious and variously colored. The characteristic prune-juice color is sometimes absent, and is replaced by a red, black, or green color, or the expectoration may be colorless. The characteristic sputum of pneumonia has three qualities,—color, consistence, and coalescence. It may appear on the first day, or not until the third or fourth. It is not always present, and may occur occasionally when no pneumonia exists, as in nasal or pharyngeal catarrh with hemorrhage, or in acute laryngitis. Diarrhœa is often present, and so are nausea and vomiting. The urine is often scanty. Albuminuria is common, and is usually most marked at the height of the disease. There was kidney-trouble in forty-one per cent. of his cases; in five per cent. of these chronic kidney-trouble of long standing existed; in only eight per cent. was it shown by clinical and post-mortem evidence that there was no urinary implication. The greatest danger occurs in an exacerbation of an old kidney-affection. Little has been added to our knowledge of the clinical aspects of pneumonia since the studies of Laennec. In the stage of engorgement we may expect to find dulness, but we do not. Grisolle found in this stage loss of elasticity in the chest-walls, especially when percussed in the supra- and infra-spinous fossæ. The crepitant râle was regarded by Laennec as the first pathognomonic sign. It is produced by fluid matter passing into the vesicles of the lung. In some seasons it is rarely heard; in old people it may be replaced by a coarse crepitant râle. Fine crepitation may be heard in other types of pneumonia, in pulmonary phthisis and syphilis, and even in bronchitis. Prolonged expiration precedes tubular or bronchial breathing. Bronchophony and metallic voice, when considerable area of dulness exists, are also signs. Pain is most frequent in the region of the nipple; next, at the base of the lung. It may be felt at any part of the chest. It is due to pleurisy. The pulse is usually 100 or more, and may reach 160. Jaundice is not very infrequent; delirium is common. Coma occurred in three per cent. of his cases; it is often uræmic. At first the respiration rises from 22 to 36 per minute, but within two days it may reach 40, 50, or 60. Inflammation of the lower lobe seems to produce more oppression than inflammation of the upper. In children the temperature reaches a greater height than in adults. It rises one or two degrees at night, and falls in the morning. The highest temperature in his case was 108°, the lowest 100.2°; ten cases the highest average temperature was 104.3°. The crisis usually occurs between the fifth and seventh days. Unless there are unusual complications or sequelæ it never occurs later than the fourteenth. The immediate cause of death is usually heart-failure from prolonged and exhaustive work, or from the influence of poisoned blood on the nerve-centres.

In speaking of the etiology, Dr. Satterthwaite quoted Sturges's opinion that it was produced by cold, dry, penetrating winds; some later writers, however, think cold an infrequent cause. Twenty-two per cent. of his own cases were ascribed to exposure to cold. The disease seldom occurs during the warmer months. Occupation has little bearing on the

causation. Regarding the influence of micro-organisms, it would be necessary, to prove that they are a cause, to show that a pure culture inoculated in the blood remote from the lungs would produce lobar pneumonia; but experiments have almost always failed in this respect, and when the lung itself has been inoculated, lobular (not lobar) pneumonia has commonly resulted. The pleura is always involved, except in the rare instances when the inflammation remains central. A comparatively frequent complication is pericarditis; a more important complication is disease of the kidneys. The spleen is apt to be enlarged, and there is catarrh of the intestinal tract. True abscess of the lung is rare. Gangrene was noted in his cases. He does not believe phthisis could ever develop from acute lobar pneumonia. The question of mortality, he said, has given rise to much dispute, largely because of indefinite statistics. Its discussion, to be of value, requires a knowledge of the variety, the patient's age, the general character of the attack. At some seasons the mortality is greater than at others, notwithstanding the same general treatment. Statistics before the middle of the present century give a mortality of from sixteen to fifty-five per cent. Just before the middle of this century, Skoda published statistics tending to prove that pneumonia is a self-limited disease. About 1842, Fleischmann, a homœopath, had a mortality of less than six per cent., which set other physicians thinking, and gradually led to less heroic treatment. The fact that the mortality varies in the hands of the same physicians shows that each case stands by itself. Dr. Satterthwaite's own experience shows that the expectant plan of treatment is best. The causes of death show what should be the direction of treatment. It should not be the reduction of temperature so much as the sustaining of the heart and obviating renal complications. The author has been led to believe by post-mortem studies that antipyretics not only weaken the heart's action, but also have some unfavorable action on the kidneys. Every case of acute lobar pneumonia should be treated by itself, and the indications met as they arise. He has often seen benefit from copious repeated cupping in sthenic cases. In less vigorous persons relief often follows cold water applications. In defective hepatic action relief has come from large doses of mercurials. In weak heart, patients have been carried through with alcoholic stimulants. In renal complications marked relief of pulmonary symptoms has followed remedies directed chiefly to the kidneys.

The author then passed to the consideration of secondary lobar pneumonia. This subdivision had been recognized by the old French school. His views of it are based upon nineteen of his recorded cases. Without committing himself to an opinion as to their etiological value, he has found the antecedent conditions as follows: Nephritis in 5; alcoholism in 2; phthisis in 2; burns in 2; rheumatism in 1; fracture of the ribs in 1; hypertrophy of the heart in 1; pleurisy with effusion in 1; pericardial effusion in 1. Contemporaneous affections were present as follows: Abdominal dropsy in 1; pericardial effusion in 1; gangrene of the extremities in 1; aneurism of the aorta in 1; bronchitis in 2; syphilis in 2; endocarditis in 2; hydrothorax in 1. Cases in which there was a suspicion of phthisis or syphilis were not included. Secondary pneumonia is usually insidious. Chill is frequently absent, and when present is not severe. Difficulty in breathing may not be marked. The crepitant râle is heard as a rule. The temperature rises rapidly, as in acute lobar pneumonia, but averages somewhat lower in range. The pulse often rises sharply at the outset, but averages lower than in the acute form. Bronchial breathing and dulness may be the most decided symptoms, and in his experience they have been the most common. The expectoration is apt to be scanty and afford little help in diagnosis. Renal symptoms are likely to be more prominent than in the acute disease. There is a decided tendency to suppuration. The duration is about the same as in acute pneumonia, but the crisis is likely to come earlier. The causes of death are about as in acute lobar pneumonia, and indicate the treatment.

NERVE-GRAFTING.

At the meeting of the Clinical Society of London, held January 25, MR. MAYO ROBSON showed a girl, aged 14, on whom he had successfully grafted two inches and a half of the posterior tibial nerve into a corresponding gap in the median nerve in the forearm (*Lancet*, February 2, 1889). He also showed the tumor which had involved the median nerve and had necessitated its removal. The history of the case, briefly, was that the patient had noticed the tumor growing for six years, but that it had grown more rapidly during the past twelve months, during which time it had caused considerable incon-

venience as well as deformity. The tumor, about the size of a hen's egg, extended from the annular ligament in front of the right wrist up the forearm for about three inches, reaching laterally from side to side, the skin being firmly stretched over but not adherent to the tumor, which appeared to be solid or semi-solid. On making an incision over the swelling the tumor bulged through the wound, and was easily separated from its cellular bed, leaving the mass attached above and below to a cord, which appeared to be inseparably blended with it. The attachments had, therefore, to be cut through. A microscopic examination showed that the cord was composed of nerve-tissue, and on the patient recovering from the anæsthetic, the parts in the hand supplied by the median nerve were found to be devoid of sensation. Arrangements were made by Mr. Robson to graft the sciatic nerve of a rabbit into the gap of the median nerve, but, fortunately, his colleague, Mr. Ward, kindly allowed him to arrange his operation at the same time that he was amputating a thigh, and to utilize the posterior tibial nerve, which was taken straight from the amputated leg into the prepared forearm, the transfer from one theatre to the other being made in a warm carbolic solution. Two inches and a half of nerve were utilized, the ends being attached to the proximal and distal portions of the median with a fine catgut suture, without the slightest tension either on the stitches or the nerve; the wound was well washed out with perchloride of mercury lotion and carefully sutured. Healing occurred by first intention. The grafting was performed forty-eight hours after the tumor had been removed; and thirty-six hours after the nerve had been grafted sensation had so far returned in the parts supplied by the median that the touch of a pencil could be localized. Day by day sensation became more and more distinct, until, when shown to the members of the Leeds and West Riding Medico-Chirurgical Society, five weeks after the operation, it was so perfect that the slighest touch could be localized, and although there was manifest diminution in volume of the abductor and flexor brevis pollicis, they were not completely paralyzed. Mr. Mayo Robson, after relating experiments on animals, which went to prove that reunion and even regeneration of nerves might occur, remarked that in such cases, where there had been absolute loss of nerve, return of function did not occur. He thought the case he had related presented very important physiological and clinical features: physiological, in that the living nerve must have immediately united and taken on function, so that thirty-six hours afterwards the distal portions of the median were functionally active; clinical, in that, if nerve-grafting to such an extent could be certainly relied on, many hitherto hopeless cases may be cured,—for instance, in injury of an extremity with destruction of one or more chief nerve-trunks, in the case of a tumor involving nerves, in paralysis due to cicatricial destruction of nerve, and in many other cases. He ventured to hope that, if, as in this case, two inches and a half of nerve would live, further experiments might show that greater lengths might survive; or, if such were found to be impossible, that the grafting might be done piece by piece, as in the case of bone-grafting. The condition which he advised to be observed in such operations were: first, entire absence of tension in the grafted nerve,—*e.g.*, two inches and a half being employed to fill an interval of two inches and a quarter; secondly, great care in dissecting out and handling the nerve; thirdly, immediate transference of the living tissue into its new bed; fourthly, the employment of only a single suture to fix the ends of the nerves; and fifthly, strict asepsis. He thought that this case, if he had correctly interpreted it, went to disprove the theory that a primary union of the divided ends of a nerve is only an appearance of union, and not a physiological one, and that the distal ends must pass through a process of degeneration before regeneration. He remarked that the return of function in the motor portion of the nerve was more gradual than in the sensory, and made suggestions which he thought might explain the difference.

Mr. Bryant asked whether the suture had included the whole thickness of the nerve.

Mr. Bowlby observed that the case seemed likely to prove a successful one, but at present it was not entirely so. It was the first recorded case of nerve-grafting in this country, although a number of experiments and operations had been published on the continent. This was the first case of primary grafting of a nerve,—that was, within forty-eight hours of the injury. He pointed out that in a certain number of instances there had been restoration without re-establishment of continuity of the nerve. He had quoted several instances of the kind in his lectures at the College of Surgeons. Still, on examining that particular

patient, he found more sensation than he had ever seen before under similar circumstances. The condition of the muscles was not quite healthy, but still satisfactory. He mentioned as a curious fact that the power of voluntary motion often returned long before there was any reaction to electricity. He had remarked a bulla on the tip of the patient's index finger, which seemed to point to a trophic lesion. He questioned the accuracy of the view generally held, that after primary suture of the two ends of a divided nerve, the lower end necessarily underwent degeneration. In a case in which he had brought the ends together, although fully an inch had been cut out, complete restoration of function ensued in a few days. In another case in which union by primary intention took place, although there was no paralysis, yet for a long time there was no reaction to electricity. He also pointed out that sensation was a very vague term, and might exist in very varying degrees. Mr. Robson's patient still experienced numbness and tingling in the fingers, showing that sensation, if good, was not perfect.

Mr. Bland Sutton urged that it did not follow, because restoration of function had taken place after joining the cut ends of the nerve by means of a piece of the posterior nerve, that the latter had become incorporated with the median nerve. In experiments that had been carried out on animals it seemed that anything which acted as a conductor, so to speak, along which the reparative material passed, bits of chicken-bone, catgut, etc., had been found to answer the purpose. The bullæ which had been noticed generally took some time to form, and he suggested that the patient was now getting the symptoms which would have followed had the grafting not been effected. He hoped that the future progress of the case would be carefully watched, and the additional information added to the report when published in the Transactions.

The President mentioned the case of a man from whom, in the course of an operation for the removal of a tumor, he had accidentally removed a large piece of the external popliteal nerve,—too much, in fact, to admit of the ends being brought together. Loss of sensation and muscular degeneration followed in the parts supplied by the nerve, and the patient left the hospital in a rather unsatisfactory condition as regarded the leg. Some months later he looked the patient up, and found to his surprise that function had been restored, and the patient said he was as strong in the leg as ever he was.

Mr. Mayo Robson, in reply, admitted that the case was not yet an unqualified success, but its progress had been so uninterruptedly satisfactory that he quite anticipated it would ultimately become so. He had passed a very fine catgut suture through the whole thickness of the nerve. He observed that even if the piece of the posterior nerve had not become incorporated with the median nerve, yet, in view of the successful issue of the case, most persons would be inclined to commend the course that had been adopted.

THE POISONOUS ACTION OF THE "LOCO-WEED."

In the *New York Medical Journal* for March 2, 1889, Dr. Mary G. Day reports a number of experiments made upon cats with the decoction of the loco-weed (*Astragulus mollissimus* and *Oxytropis lamberti*) gathered in September. Symptoms of disturbance began to appear within two days, and in the following order: The kitten became less active, the coat grew rough, appetite for ordinary food diminished, and fondness for the "loco" increased, diarrhœa came on, and retching and vomiting occasionally occurred. The expression became peculiar and characteristic. Emaciation and the above symptoms progressively increased until the eighteenth day, when periods of convulsive excitement supervened. At times the convulsions were tetanic in character; frothing at the mouth and throwing the head backward as in opisthotonos were marked. At other times the kitten would stand on its hind legs and strike the air with its fore paws, then fall backward and throw itself from side to side. These periods of excitement were followed by perfect quiet, the only apparent sign of life being the respiratory movements. After a short interval of quiet the convulsive movements would recur. These alternate periods of excitement and quiet lasted thirty-six hours, when the posterior extremities became paralyzed, and the kitten died about two hours afterwards. There was no apparent loss of consciousness before death.

The post-mortem examination revealed the presence of ulcers in the stomach and duodenum. Some of the ulcers had nearly perforated the wall of the stomach and duodenum. The heart was in diastole; brain and cord appeared normal. As might be expected from the emaciated condition, the entire body was anæmic.

In a second case, sixty to seventy cubic

centimetres of a more concentrated decoction were fed daily, with other food as before, to a vigorous adult cat. The symptoms of inactivity, loss of appetite, rough coat, diarrhœa, and the peculiar expression of countenance were as in the first case. By the twelfth day the cat was wasted almost to a skeleton, and was correspondingly weak. Paralysis of the hind limbs came on, and the cat died on the thirteenth day. There were no periods of excitement in this case. Perhaps it was due to the amount of the poison given.

As a test experiment, two strong young cats were confined in the same place, fed from the same dish, and treated in every way the same, except that to one was fed daily a decoction of the "loco." The one fed "loco" acquired the "loco disease" with the characteristic symptoms described above, while the other, eating ordinary food only, remained healthy.

Some experiments were also made at the Michigan Laboratory of Hygiene, under the direction of Dr. Victor C. Vaughan. Subcutaneous injections of the concentrated decoction caused nervous twitchings in frogs and kittens, and, if large amounts were used, death followed in from one to two hours from paralysis of the heart. The same symptoms were produced in frogs by the injection of an alcoholic extract of the residue left after the evaporation to dryness of the decoction. The diarrhœa, which was so marked a symptom in the cats experimented upon, has apparently not been noticed as a characteristic symptom in horses and cattle poisoned with this weed, although Professor Sayre has reported an ulcerated condition of the intestines of a cow poisoned with "loco-weed" upon which he made an autopsy. As in cattle, the author noticed in cats that craving for the loco decoction was soon acquired, and from experiments on material gathered in different months that the greatest amount of poison is present in the autumn and winter after the seeds have ripened, thus explaining the great prevalence of the "loco" disease in these seasons. From the experiments the author draws the following conclusions:

1. There is some poison in "loco-weed" which may cause the illness and, if sufficient quantity is taken, the death of an animal.

2. This poison is contained in the decoction obtained from the plants, and by systematically feeding it to healthy cats cases of "loco" disease may be produced.

3. Taste for the green "loco-weed" may be experimentally produced in the jack-rabbit.

4. From the large quantity of the plant or the decoction required to produce the disease, the poison must be weak, or, if strong, it must be in very small amount.

THE EMPLOYMENT OF TANNIN IN TUBERCULOSIS OF THE BONES AND ARTICULATIONS.

Professor Andrea Saccharelli, of Parma, calls attention to the effects which follow the employment of this remedy in the form of a dressing in tubercular lesions, basing his conclusions partly upon a series of experiments made upon animals inoculated with tuberculous matter, and partly upon his clinical results (*Journal de Médecine et de Chirurgie*, February, 1889). It has been utilized in various lesions, such as ostitis, white tumors, fistula, resections, etc., employed either in the form of a powder or in the form of gauze soaked with an alcoholic solution of tannin. According to the author, this substance is a powerful aseptic and favors the reunion of wounds, while it has special anti-tubercular properties, since it is able to prevent the development of tuberculosis, and even destroys tubercles when they already exist. He believes that it is without doubt better than iodoform, while being more powerful and free from danger. In many cases he has also combined the internal use with its external application. In this latter respect M. Raymond also believes that tannin taken internally in tuberculosis is quite comparable to the action of mercury in syphilis.

Dr. E. Houzé of the Hospital St. Jean, Brussels, after having tried the tannin treatment on all his phthisical patients for the last year and eight months, states as the result of his observations that it gives excellent results in all stages of the disease, and especially in the condition where cavities exist. (*Lancet*, March 9, 1889.) Indeed, he has no hesitation in declaring that of all the different kinds of treatment for phthisis which he has tried this has given by far the most encouraging results. The dose he employs ordinarily is fifteen grains, which quantity is taken three times a day. It is, as a rule, well borne; where this is not so, it is ordered to be taken with meals. After the first few days the expectoration and the sweats diminish, the cough decreases, and in many cases the appetite undergoes a marked improvement. The majority of the patients suffered from some slight degree of constipation, though in some this feature was sufficiently marked to require treatment; while others, again, suffered from

diarrhœa. The character of the expectoration changed for the better, the sputa becoming white and frothy instead of green and firm. In some cases the diminution of the expectoration was followed by increased dryness of the cough, so that the patients complained that it fatigued them more; this was easily remedied by prescribing a few spoonfuls of syrup of codeine. The physical signs underwent a remarkable change for the better, at least those depending on auscultation, moist râles giving place to dry bronchi, and large gurgling râles decreasing progressively until they gave place to mere blowing respiration. These changes were evidently due to the drying up of the cavities, in consequence of which the hectic present in many of the cases vanished, the patients increasing considerably in weight and gaining strength in a remarkable manner. The percussion signs were not found to undergo so marked a change as those dependent on auscultation, but even here some improvement could be detected. No bacteriological observations were made.

THE VALUE OF WATER IN THERAPEUTICS.

At the meeting of the Medical Society of the County of New York, held January 28, 1889, Dr. Simon Baruch read a paper, entitled "The Value of Water in Therapeutics" (*Medical Record*, February 9, 1889).

The author contrasted the present position of water as a therapeutic agent with that formerly occupied by it, compared methods now in vogue with those of the past, and drew lessons verified by clinical experience. Most text-books devoted little space to water as a therapeutic agent.

His first experience with the use of water externally took place when he was army surgeon in the civil conflict. It was customary at that time to use water freely on wounds, and the results compared very unfavorably with those from the modern dry method; suppuration and mortification were common. Experience had demonstrated the value of boiled water in laparotomy, and also the fact that drugs added to render the water antiseptic would be less called for if the water were clean and boiled before using.

The application of water as a styptic was of modern origin. In post-partum hemorrhage, for instance, intra-uterine irrigation by hot water was much superior to persulphate of iron, which formerly was much used. Strict cleanliness and hot water at the time of the operation would be the antiseptic of surgery in the future. We were now in a position to appreciate the value of hot vaginal douches introduced by Dr. Emmet in place of zinc solutions, etc., in certain inflammatory processes. While speaking of the value of water employed externally, the author mentioned certain skin-diseases, but pointed out eczema particularly as contraindicating its use. It was also contraindicated in suppurating otitis media, a disease in which much better results had been obtained by substituting the dry boracic-acid dressing. Time had also shown that in normal labor vaginal injections, once commonly practised by some, were contraindicated. The author cited some cases in practice in proof of his deductions.

Passing to the internal use of water for other than diuretic and diaphoretic effects, he first took up its employment in dyspepsia, both recent and chronic, citing cases in which marked benefit had been derived. In recent cases washing the stomach would often bring about a cure in a very short period, while in chronic ones longer time was required, and the remedy had to be supplemented by stricter diet, and perhaps by drugs. The sipping of hot water some time before breakfast was also of benefit in some cases. Washing the stomach had been employed with success in gastric and gastro-intestinal disturbances of infants, and free irrigation of the stomach for ileus was a remedy which should be resorted to before laparotomy. Dr. Baruch could testify to the good effects of irrigation of the intestine in catarrhal jaundice, but this treatment had proved a failure in his hands in jaundice from gall-stones, although others had reported success. In summer diarrhœa it lessened the number and changed the character of the movements, and arrested purging.

Cold water acted on the human body chiefly by mechanical and thermal influence. By its use changes could be wrought in the innervation of different parts, and in the circulatory system to the extent of producing only slight contraction of the blood-vessels or of causing absolute death by shutting off all circulation. The agent was beneficial when applied to the surface in proportion to the reactionary powers of the patient. The application of such briefly-stated principles might be left to each practitioner, but Dr. Baruch mentioned chronic diseases involving faulty nutrition as those in which the external application of cold water afforded much satisfaction, especially in robust patients who

reacted well under drying and friction after the cold bath; and in gastric and cardiac neurasthenia it went far towards restoring the health. The wet sheet involved the presence of a competent assistant, but sometimes promoted reaction better than the bath. In some chronic diseases the applications should be local. As the internal use of hot water had enabled him to dispense largely with such palliative remedies as pepsin, so had the external application of cold water enabled him to dispense largely with so-called tonic medicines. Cold water to reduce the temperature, and to stimulate the nerve-powers to reaction from shock produced by cold upon a large surface, had obtained a wide application, as in hyperpyrexia from sunstroke, rheumatic fever, typhoid fever, etc. The author dwelt upon the greatly lessened mortality in typhoid fever in cases where the temperature was kept down by cold or tepid water, as shown by Brandt's statistics and others. The percentage of deaths in typhoid fever in this country was little better than that recorded in Germany and elsewhere when the application of water to the surface was not practised; it was about twenty-one to twenty-six per cent., whereas under the use of cold or tepid water it had fallen to seven or below. Dr. Baruch had become convinced that the ordinary treatment of typhoid fever should give way to the hydropathic method.

Dr. J. Harvie Drew continued the discussion of this subject in a short paper, impressing its importance more especially from a physiological stand-point. The following facts should first be noted: 1. The chief component part of the human body in health was water; its relative proportion to all the solid constituents had been estimated to be two-thirds or three-fourths the entire weight of the person. 2. Water constituted almost the total volume of each one of the circulating fluids, including that of those of digestion. 3. It was the essential medium by which digestion was accomplished, absorption made possible, and the transportation of the elements of nutrition to the various tissues of the body was made easy. 4. As water entered so largely into the composition of the tissues it became of corresponding importance to every process in assimilation. 5. Water was the medium by which all waste matters were held in solution and conducted to their several points of exit. 6. Observations and experiments had shown that from three to four pints of liquid food were required to maintain normal functions and weight in an individual weighing one hundred and forty to one hundred and fifty pounds. 7. It was a clinical fact that persons thin in flesh were by habit, or for other reason, accustomed to take very small quantities of liquid food, while well-preserved and fleshy persons were copious drinkers of fluid in one form or another. 8. It was also a clinical fact that in every morbid or diseased condition of the system, whether organic or functional, the functions of digestion, absorption, assimilation, secretion, and excretion, embracing elimination, became in some way disturbed,—sometimes one or more of these functions, at others all of them, to a greater or less degree, in the same patient.

It thus became evident that water in its various applications was of extreme importance in the treatment of disease and the restoration of the normal functions of the body. Many physicians objected to the use of water at meals, seeming to forget that it was rapidly absorbed and took the place in the circulatory fluids of the large quantity of water which these gave up during the digestion and absorption of the food in process of consumption. Water or liquid food was seldom taken in excess, but many persons took too little and suffered from deficiency in weight, dyspepsia, constipation, tenacious secretions, dryness and other disturbances of the skin, defective elimination, and all the symptoms brought about in consequence of such disturbances of normal function. The physician should always make careful inquiry as to how much his patients were taking of liquids in one form or another, and he would often be surprised to find that persons who should be eliminating from three to five pints were consuming but one to two pints.

THE TREATMENT OF CHRONIC DYSENTERY BY ENEMATA.

Belleli sums up a series of articles on this subject with the following observations: 1. The symptoms of chronic dysentery do not depend so much on the site and extent of the local lesions as on the effect they produce on the rest of the digestive tract. This is influenced largely by the general state of health of the individual, so that two persons with nearly identical lesions in the colon may have symptoms of varying degrees of severity. 2. In the dysentery of warm climates, the lesions in the colon are often so extensive as necessarily to require a considerable length of time

for their repair. 3. Enemata, when long continued, have grave disadvantages. The daily distension of the colon stimulates the rest of the digestive tract, and causes imperfectly-digested food to be hurried into the large intestine, which it irritates, and so aggravates the disease. And the daily distension of the colon, when long continued, tends to lessen the normal contractility of the coats of the bowel necessary for the performance of its proper functions. Enemata, therefore, are valuable in slight and easily-reparable lesions of the colon; but in the more severe cases other measures must be adopted, such as Carlsbad water, taken on rising in the morning.—*London Medical Recorder*, February 20, 1889.

THE PREVENTION OF SHOCK BY ATROPINE.

Dr. Lewis A. Stimson, president of the New York Surgical Society, at the meeting held January 9, 1889, recommended the hypodermic injection of from $\frac{1}{75}$ to $\frac{1}{100}$ of a grain of atropine previous to giving ether for operation. (*New York Medical Journal*, March 9, 1889.) He referred to two cases of hysterectomies, in one of which the woman had been etherized, so as to admit of a brief examination, a few days before the operation, and had come out of the influence of the anæsthetic in a deplorable condition, from which she had not rallied for several hours. For considerable periods the pulse had been very weak and even imperceptible. On the contrary, atropine having been given before the ether on the day of the operation, she was taken from the table with a pulse as good as before the operation began. The subsequent symptoms of shock had been very slight. He had used atropine for this purpose for five or six years, having first observed its control of the inhibitory action on the heart in certain physiological experiments. How much influence it exerted it was not always easy to determine, but he believed it to be of great value.

We would also call attention to the paper of Dr. Bressler, published in this number of the Gazette for further confirmatory evidence as to the value of atropine in shock.

A NEW TREATMENT OF ANEURISM.

A Glasgow correspondent of the *Lancet*, March 9, 1889, publishes a short account of a demonstration by Dr. Macewen of a new method of treating aneurisms.

Needles are passed into the sac in such a way as just to touch the lining of the opposite wall. The oscillation of the needles causes a succession of fine scratches "on the inner surface of the endothelium, irritating it slightly and leading to the proliferation of leucocytes," which develop into a white fibrous mass. It is certainly difficult and probably unsafe to criticise a method of treatment without a knowledge of all the details, which were no doubt forthcoming at the meeting at which the demonstration was made. For example, we do not know if this method has been tried in the human subject, and whether the results have been submitted to careful examination. But, judging from the brief account quoted from, this method does not commend itself to us. We cannot think that it is based on right principles. Of course we need not say that in aneurisms coming under a surgeon's notice there is no endothelial lining of the sac, and that in the majority of cases there is more or less blood clot or laminated fibrin. We can quite imagine that the scratching of the needles might be useful in starting fresh coagulation, and so leading to the consolidation of the aneurism. But it would require enormously strong evidence to prove that proliferating leucocytes could organize into a firm mass of connective tissue amid the tumultuous flow in a large aneurism. And it also seems clear that the layers of laminated fibrin within the true sac of an aneurism are a very serious obstacle to organization of any material within them. Other practical objections to this plan of treatment are the possibility of causing ulceration of the sac or acute inflammation of the surrounding tissues, and also the difficulty of adjusting the needles with sufficient precision.

THE DIAGNOSIS OF TUMORS OF THE CORPORA QUADRIGEMINA.

Up to 1881 only ten cases of tumor of the corpora quadrigemina had been published. Since then, Dr. Nothnagel has met with three cases in his own practice, and in two of them he made correct diagnoses, and published an account of his most recent case in the *Wiener medicinische Blätter*, January 17, 1889. (*The Medical Chronicle*, March, 1889.)

The patient, a boy of fifteen, had a severe fall from a tree more than three years before death. After an interval of time, in which there were no head symptoms, his gait began to be affected. He staggered, walked in a

zigzag path, and frequently tumbled. About half a year after the fall, vomiting and violent cramps and pains were complained of. On admission to the hospital—three years after accident—there was optic atrophy, with complete amaurosis and bilateral external ophthalmoplegia, the left eyeball being almost fixed. The size of the pupils varied, but the reaction was very sluggish. Hearing was affected, probably owing to chronic catarrh of the middle ears. With the exception of the ocular nerves, no other cranial nerves were affected. There was marked ataxia of the cerebellar character, but no loss of power or sensation in the limbs. The clinical diagnosis—tumor of the corpora quadrigemina, with hydrocephalus—was confirmed by the autopsy. The tumor was found to be an epithelial papilloma, springing from the choroid plexus.

The clinical diagnosis of the locality of the tumor was based on the combination of cerebellar ataxia and bilateral external ophthalmoplegia. Great stress is laid on the early onset of ataxia. In all the cases which Nothnagel himself observed, ataxia was the first symptom noticed, and in the majority of cases recorded by others this sign was present. The ataxia is produced by lesions of the posterior pair of the corpora quadrigemina. For it may long precede symptoms of intracranial pressure, due to hydrocephalus. It has been observed in cases in which the middle lobe of the cerebellum was healthy, and Gowers has published a case with no ataxia, in which the anterior pair of corpora were diseased and one of the posterior tubercles slightly affected. It is hardly necessary to add that a reeling gait is not pathognomonic of lesions of the posterior pair of corpora quadrigemina.

Disorders of vision, though they occur in most cases, are of no value for localization, as they may be the result of optic atrophy. One case has been published in which the posterior pair of corpora were diseased without any affection of sight, but the connection between disorders of vision and lesions of the anterior pair is uncertain.

In three of the four cases which Nothnagel has published, the important symptom of bilateral paralysis of ocular muscles was pronounced. One eye was more affected than the other, and the third, fourth, and sixth nerves were all involved. According to Meynert, the nuclei of these nerves are so near the corpora quadrigemina that a vascular tumor of the latter may easily affect all the nuclei of oculo-motor nerves.

The diagnosis based on cerebellar ataxia and bilateral ophthalmoplegia will be strengthened by such symptoms as indicate intracranial pressure, due to hydrocephalus, and the late onset of hemiplegia, and other indications of the extension of the growth, to the peduncles or pons.

IGNIPUNCTURE OF THE TONSILS.

Dr. Wilhelm Roth, of Fluntern, finds that in order to reduce the size of the tonsils without risk of troublesome hemorrhage, which is not uncommon, especially in young subjects, the best plan is to employ ignipuncture, as has been recommended by Krishaber, and more recently by Verneuil. The tonsils and neighboring parts are at first brushed over with a ten to twenty per cent. solution of cocaine. The finest point of the thermocautery, heated to redness, is then inserted to a depth of about five millimetres in three or four spots a few millimetres apart from one another on the tonsils. The instrument is not allowed to remain more than one or two seconds in the tissue. The whole operation, including both tonsils, can be performed in a very few minutes without any bleeding, and with scarcely any pain. It must be repeated four or five times at intervals of two or three days, and this is usually sufficient to cause the tonsils to return to their ordinary condition.—*The Lancet*, February 16, 1889.

THE TREATMENT OF PLEURISY BY THE INHALATION OF COMPRESSED AIR.

Professor Forlanini, of Turin, strongly recommends the above method of treatment chiefly with a view to promoting the expansion of the compressed lung after the fluid has been evacuated. And even in tubercular cases, which, the author considers, form more than half the cases of pleuritic effusion, much good is obtained, for the compressed-air treatment increases the appetite and the sense of well-being, promotes tissue-change, and generally improves the condition of the patient. The difficulty has hitherto been the complexity and costliness of the necessary apparatus, but Professor Forlanini has devised a more simple form. The difficulties in the nature of giddiness, palpitation, ringing in the ears, etc., are simply questions of dose and skill in administration, and are not drawbacks inherent in the system.—*The London Medical Recorder*, February 20, 1889.

SENECIO CANICIDA.

The physiological action of *Senecio canicida*, a composite plant, native of Mexico, and used, as its name implies, to poison dogs, has been investigated by M. DEBIÈRRE. The active principle of the plant is more abundant in the root than in the leaves. Three stages occur in the poisoning arising from its use,—viz., a period of excitation, then one of rest, and lastly of spasm. The temperature rises and remains high until the animal dies, death taking place from paralysis of respiration; the pupil of the eye is dilated, and the blood becomes black and fluid, and the membranes of the brain are found to be congested. While the poison paralyzes the sphincters of the bladder and rectum, it irritates the involuntary muscles of the intestines, bladder, and iris. Although it causes tetanic symptoms like those of strychnine, it differs from that alkaloid in lowering reflex excitability.—*The Pharmaceutical Journal and Transactions*, March 2, 1889.

THE TREATMENT OF SUPPURATIVE DISEASE OF THE UTERINE APPENDAGES.

At the meeting of the New York Academy of Medicine, held January 24, 1889, DR. H J. BOLDT read a paper thus entitled (*New York Medical Journal*, March 9, 1889), in which he endeavored to show that operative interference was positively indicated in certain cases of pyosalpinx about which there was apt to be too much difference of professional opinion as to the treatment called for. He remarked that, while many women had been deprived of their tubes and ovaries without the least benefit, and had had reason to regret having consented to being operated on, there was also a tendency to go to an extreme in the other direction. Cases were not selected with proper care which deserved general instead of operative treatment. Diseases of the uterine annexa might be roughly divided in three groups: 1. Those in which an operation was altogether unjustifiable. 2. Those where the effect of general treatment was to be watched for a time before an operation was considered. 3. Those where delay was not only inadvisable, but dangerous. He wished to present several cases that had occurred in his own practice which had undoubtedly belonged to the third group.

1. A long-standing case of metritis and local peritonitis following confinement, with radiating pains, headache, cardiac palpitation, and dyspnœa; also, within five years previous, syphilitic infection had been superadded. Micturition had been frequent, menstruation very profuse, pains very severe before the flow began, and some leucorrhœa after it had stopped. Examination had shown an indurated cervix tender to the touch, the uterus somewhat enlarged and sensitive, both tubes and ovaries much enlarged and prolapsed, and the surrounding structures very sensitive. A diagnosis of double salpingo-oöphoritis syphilitica with endometritis had been made, and an operation advised unless treatment was soon followed by improvement. A little later a physical exertion had been followed after a few hours by violent pain in the epigastrium, accompanied by a fresh attack of pelvic peritonitis. Five days later general peritonitis had developed, the tubes had lost their full contour, and, instead, a fulness with excessive painfulness had been found on either side of the uterus. Although rupture of the tubes had evidently occurred, he had, unfortunately, not made up his mind to operate till the evening of the next day. The patient had survived the laparotomy only sixty hours; it had been deferred too long.

2. A case of catarrhal salpingitis of long standing in a woman, of 29 years, a sequel to scarlet fever at the thirteenth year. Severe pain had been suddenly developed in the lower part of the abdomen, had increased for a time, then subsided for several days, only to return accompanied by a temperature of 104° F., and a general peritonitis with chills and emaciation. Examination had been exceedingly painful, but had shown fulness and fluctuation to the right of the uterus. Rupture of a tube distended by pus being evident, laparotomy had been performed on the next day, the abdominal cavity had been washed, and dense adhesions removed. The hemorrhage from the latter proving uncontrollable, and the author being forced to cut short the operation owing to the state of the patient, he had tamponed the pelvis with iodoform gauze. This had acted as both a drain and a hæmostatic. Thirty-six hours later he had unwisely replaced the gauze by a double-current rubber drainage-tube, and had washed out the abdominal cavity again through it. If he had closed it at once the patient would probably have recovered. There had been no odor. After some hours the pulse had become very feeble, but had been restored by raising the foot of the bed and irrigating the abdominal cavity with a warm solution of chloride of sodium (one per cent.). On the third day the wound had begun to show an odor, and from

that time on became increasingly fetid, although irrigation had been continued without intermission. The patient had died on the fifth day. The only pathological change found at the autopsy had been diffuse nephritis; the abdomen had been clean and odorless, and the peritonitis decidedly diminished in extent. The foul odor of the washings was inexplicable to him. It was clear, however, that the operation had not been done early enough.

3. In this case a double pyosalpinx and endometritis of puerperal origin had followed a tedious labor eighteen months previously. The distended tube had been ruptured in sexual intercourse. Some vomiting and slight evidences of shock had presented on his arrival at the house. There had been marked tenderness over the entire abdomen, but no evidences of intense general peritonitis. Within two hours he had opened and cleaned the abdomen, removed both tubes, and closed the abdomen without drainage, although peritonitis had begun. Immediate and uninterrupted recovery had followed.

4. In this case, otherwise similar to No. 3, the operation had been done about five hours after the rupture of the greatly distended tubes, and a similar excellent recovery had followed.

5. In this instance, having found double pyosalpinx, he had advised an operation, but another physician had called such a procedure rash, and had assured the patient of improvement without it. Rupture had occurred three months later, an immediate operation had been declined, and death from general purulent peritonitis had quickly followed.

6. In this case he had used massage of the tubes after the method of Brandt, and had obtained marked improvement at once in the symptoms of the pyosalpingitis, which had followed a recent abortion. Nevertheless, six days later, without apparent cause, there had been a severe chill followed by general peritonitis, which, however, had almost subsided four days later. He had been apprehensive of the final result from the first, especially as the tubes had enlarged rapidly as soon as massage had been suspended (on account of the acute pain caused by it). He had brought an aspirator to the house, intending the next day to take the risk of emptying the tubes *per vaginam*. On the evening of the same day, however, rupture had taken place. He had found the patient three-quarters of an hour later screaming with agony, cyanotic, with a high temperature and a feeble, frequent pulse. Forty minims of Magendie's solution had been given, counsel sent for, and preparations made for an operation. An apparently very rapid improvement which the patient had made had created enough doubt in his mind to make him wait for daylight to work by. In two hours she had begun to sink, and when morning had come, despite free stimulation, an operation was out of the question. The temporary rally made by the patient had also deceived an eminent specialist whom he had called in. The case had occurred in private practice. In a hospital or clinic he would not have hesitated a moment. It was unfortunate that in private practice operators were apt to be overborne by side considerations, such as unwillingness to sacrifice a chance of the patient's having children in the future, even when her own life was in imminent peril. The patient in this case had been only 23 years old. An earlier operation would easily have saved her life. He might in the future change his opinion, but with such cases as the foregoing in mind he unhesitatingly advised opening the abdomen in any similar condition, whenever occurring. If the diagnosis proved incorrect, the opening could be closed again, no harm was done, and great risks were avoided.

He believed the diagnosis of pyosalpinx could be made in most instances. It was found unexpectedly at autopsies quite as often as it was mistakenly operated for. Hydrosalpinx and hæmatosalpinx, ovarian and parovarian cysts, could frequently be distinguished by the history. He had believed for several years that patients with intractable hydrosalpinx should be operated on, since the disease easily became purulent; or, if the tube ruptured, might cause fatal peritonitis. He believed in operating in cases of pyosalpinx without waiting for rupture to occur. The danger was then far less. Health was restored entirely, which never could be done while the diseased tubes remained. The patient was taken out of a condition of constant peril and almost constant suffering. The high mortality which a prominent German operator had ascribed to the operation was mainly due to the fact that the operation was deferred until every other means had been exhausted and the condition of the patient was already critical. Furthermore, in case an exploratory incision showed hydrosalpinx or hæmatosalpinx and the tube was firmly occluded at some point, it should not be left in to undermine the health and jeopardize life. The chance of pregnancy in such a case was *nil*, the likelihood of absorption very slight,

and that of return of the fluid after tapping great. Whether the tube was occluded or not could easily be ascertained by observing whether gentle stroking towards its outlet diminished its calibre. When a tube filled with pus could be emptied by gentle pressure he would advise *proper* massage (after Brandt's method), rest in bed, and careful tamponing; but he did not meet with such cases often, and believed them comparatively rare. Also, when a tube was only moderately distended (to about the size of the thumb) and no symptoms were given rise to, he did not favor an operation. Such a collection of pus might in time become inspissated, as occurred elsewhere in the body. But women with such a condition rarely consulted a surgeon or submitted to vaginal examination, even if it was proposed, and that was not likely to be done in the absence of symptoms of local distress. Aspiration of distended tubes was safe only when the operator felt sure of very firm adhesions about the site of the puncture. Some very greatly distended tubes due to puerperal infection gave no signs of their presence other than fever and emaciation. An examination should always be made in such cases, and an operation at once resorted to. It might be necessary to make an exploratory incision to distinguish this condition from the ordinary pelvic abscess in case there were extensive adhesions. It might not be possible without an incision to distinguish it from an ovarian tumor. Massage was a dangerous procedure in any but trained hands. Perhaps its main usefulness was to aid in diagnosis. Despite all he had said, no one was more averse than he to indiscriminate removal of the uterine appendages or more inclined to use every practicable means of saving young women from this (in one sense) degradation.

Dr. Wylie opened the discussion of the two papers by remarking that the reader of the first of them had spoken of tapping pelvic abscesses as if they were themselves a disease, and not a symptom. He thought the aspirator had done more harm than good in this department of gynæcology. "Curing" abscesses in the pelvis by aspiration might relieve symptoms and sepsis, but did not lead to a cure of the patient,—that is, restoration to health,—because that which had caused the abscess remained untouched. Then there were almost always two,—one at least on each side. The most important fact to keep in mind in regard to them was that their frequency was entirely due to mistakes made during and after delivery. They would become less common, moreover, when salpingitis and pyosalpingitis were detected and treated earlier. He believed that, when they were found, no matter where they were situated, it was proper to open them through the abdomen if the condition of the patient allowed, and there was no sepsis. It could be done with a mortality of but one or two per cent. But if the sepsis was marked, then the danger of peritonitis after an operation was great, and we should then see if it was possible to puncture them behind the uterus. If it was, he would advise puncture, washing out, and subsequent operation. If they were out of reach, however, it was better to operate anyhow, not opening over the adhesions, but through a part of the abdomen free from these. A diagnosis could then be made and it could be seen whether an opening *per vaginam* was advisable. He used massage for diagnosis, but would not like to for treatment.

Dr. Paul F. Mundé remarked that pelvic abscess as he used the term was different from pyosalpinx, and meant an abscess in the cellular tissue. Under bimanual examination, any abscess in the cellular tissue was freely movable, whereas the uterus was fixed. On the other hand, any intraperitoneal exudation, especially into the tubes, whether palpable or not, allowed the uterus to be lifted up and down more or less. He had frequently verified this test by laparotomies. He did not agree to the statement that the aspirator had done more harm than good. The knife had also done harm. Whenever he was satisfied of the presence of a single pelvic abscess, and could reach it, he aspirated and washed and drained the cavity.

Turning to the second paper, he would say that he entirely agreed with Dr. Boldt about operative treatment. He would, however, remove tubes filled with pus to the size of the thumb. The disease called pachysalpingitis (an increase of the connective tissue), which only Kaltenbach had described, always called for removal of the annexa. As to the diagnosis of pelvic tumors, he agreed that it was not always possible to make it bimanually. A woman who had grown tired of suffering had once forced him to perform laparotomy or leave her to call another surgeon who would. He had found hæmatoma of both ovaries as large as oranges, but with flaccid walls. He would remove the tubes and ovaries in all cases of hæmatosalpinx and hydrosalpinx. He had met with a case where the tubes and ovaries had been removed which

proved to be one of polypoid endometritis which a single scraping might have cured. He did not deny that too much haste was sometimes used in proceeding to operate, and favored a certain amount of temporizing. But he was much dissatisfied with our present ability to make the diagnosis.

Dr. A. P. Dudley had treated two cases of true pelvic abscess by aspiration, and successfully. He thought it a valuable point in diagnosis that the pelvic abscess tended to dissect its way downward between the rectum and vagina, and not to rise into the abdomen. He would not use aspiration for an abscess in front of the uterus; he might for one in the iliac fossa. Pyosalpinx should not be called pelvic abscess, since it led to unnecessary confusion of terms. He thought a woman's station in life should not be allowed to influence the surgeon when her own life was at stake.

Dr. Boldt repeated that massage was suited to some mild cases. Brandt had told him that he had cured pyosalpinx by massage. He himself had never produced more than relief for a time. It was necessary to have the woman in a nearly sitting posture, with the abdominal walls relaxed and thin, and one finger behind the uterus as close to the tube as possible.

HYPODERMIC INJECTIONS OF QUININE IN MALARIA.

Dr. J. A. Correa de Carvalho, of Extremoz (Portugal), has recently recorded a case of malaria, which he succeeded in curing by hypodermic injections of quinine. The patient was a woman, aged 35, in whom the disease had reached the cachectic stage. The skin and mucous membranes were discolored, and the spleen, which was very tender on pressure, reached down to the left iliac fossa, and extended towards the right to within two or three centimetres of the middle line. The stomach was dilated, and the patient suffered much from dyspepsia. The temperature varied from 39.8° C. in the morning to 38.2° in the evening. Sulphate of quinine was given internally in capsules and in pills, but only with the effect of aggravating the gastric disorder. On November 18 hypodermic injections of neutral hydrochlorate of quinine were commenced, at first in doses of 4, and afterwards 5, decigrammes. The temperature soon began to fall even in the morning, and by the middle of December it was normal, never exceeding 37.5° in the evening, and being sometimes below 37° in the morning. On January 13 the patient was discharged cured, the spleen being much reduced in size and not at all tender, and the discoloration of the skin and mucous membranes having almost entirely disappeared. Her dyspepsia had also ceased to trouble her. The injections, which were all made under the skin of the forearm, caused a little irritation. A few small abscesses formed around some of the points of puncture, and had to be opened, but gave no further trouble. The following is the formula of the solution used for injection: ℞ Basic hydrochlorate of quinine, 1 gramme; pure hydrochloric acid, ♏i; distilled water, 2 grammes. These ingredients should be placed in a test-tube, and exposed to the action of gentle heat. A clear solution will be obtained, each cubic centimetre of which will contain five decigrammes of neutral hydrochlorate of quinine. The solution should be injected warm. Dr. A. Rocha first recommended this method, which he had employed successfully in a patient suffering from malaria, to whom it was found impossible to give quinine in any other way. Drs. Beurmann and Villejean had independently described a somewhat similar method a short time before.—*British Medical Journal*, March 16, 1889.

ON THE ACTION OF SOME DIETETIC MEANS AND DRUGS ON THE SECRETION OF PANCREATIC JUICE.

Following the suggestion by Professor J. P. Pavloff, Dr. Polīkarp D. Küvshinsky, house physician to the Alexandrovsky Town Hospital, St. Petersburg, has carried out an important experimental inquiry into the biology of the pancreas in healthy dogs with a permanent pancreatic fistula (established after Pavloff's method). The first group of these highly-interesting researches was devoted to studying the course of the pancreatic secretion under normal conditions. The following main inferences may be drawn from the observations: (1) While presenting certain oscillations in regard to its quantity, the secretion never ceases altogether (the minimal amount observed by the author being 1.4 cub. c.c. (20 gtt.) in half an hour). (2) The functions of the gland are quite distinctly influenced by ingestion of food, mental state, and sleep. (3) A general course of secretion within twenty-four hours after taking food may be sketched thus. Very shortly after the meal the secretion gradually increases, to

reach its primary and highest maximum in the majority of cases nine out of seventeen in about a second half an hour; less frequently six in seventeen during the first one; and only rarely two in seventeen in the course of a second hour. Having attained the maximal level, the secretion usually decreases more or less rapidly (only very seldom keeps at it for an hour or so) and markedly, to rise and sink repeatedly, the re-elevations occurring at about four-hour intervals (*i.e.*, about a first, fifth, ninth, thirteenth, seventeenth, and twenty-first hour after a meal). Bernstein's "secondary maximum" is reached about a twelfth hour. (4) The quantity of the juice secreted, however, presents considerable (both hourly and daily) oscillations, not only in individual animals, but even in the same one in various days, and that in spite of all conditions being as equal as realizable. (5) An average daily (twenty-four hours') quantity of the juice seems to be about 335 cub. c.c. (in a dog of 19 kilogrammes in weight, receiving 300 grammes butcher's meat, 200 bread, and 300 milk a day). (6) The secretion does not cease even in animals deprived of food. Thus, in a dog kept without any food for twenty-four hours, an hourly quantity of the juice, as determined on the next day by the examination every half-hour, was oscillating between 3.4 and 8.8 cub. c.c. A similar statement has been made by Dr. P. Vilijanin, of Professor S. P. Botkin's cliniç, in the *Ejenedelnaia Klin. Gazēta*, 1887, p. 309. According to his observations on dogs, even on a third or fourth day of starvation, about .5 cub. c.c. of the juice is still secreted by the pancreas every fifteen or twenty minutes. (7) The secretion is most distinctly increased by mental stimuli, such as excitement or emotion, as the following, yet unique, experiments of Dr. Küvshinsky unmistakably prove. Having starved a dog for twenty-four hours, the author brought it into an excited state by exhibiting its usual meals, by mincing butcher's meat before the animal's very eyes, etc. The secretion, amounting, *e.g.*, to 1.1, or 1.4 cub. c.c. in ten minutes before the experiment in one animal, and to 3.8 in an hour in another, rose by degrees to 5.2 or even 10.1 in (the first) ten minutes respectively, to 29.8 in (the first) hour, to gradually decrease again on quieting the animal by removing the exciting agent from the room, and to increase on a repeated exhibition of the food after a while. The results remained identical in every one of the experiments of the kind. As to the digestive power of the juice, it remains equally energetic, both during the animal's excitement and after its taking food. The "emotional" (*sit venia verbo*) juice, however, contains only 3.5 per cent. of solid constituents, while in that secreted in the course of the first hour after the meal the proportion rises to 7.7 per cent. (8) During sleep the secretion decreases to a very considerable degree. Generally speaking, it commences to sink just on the animal's falling into slumber, to gradually decrease further as its sleep becomes deeper, and to as gradually increase on its awakening. The diminution sets in the more rapidly the more fatigued the animal is (that is, the more rapidly it falls into a deep sleep). (9) Some of the daily oscillations (*sub* 3) are to be ascribed to variations in the animal's state (cheerfulness, mental fatigue, drowsiness, excitement, etc.), some to degree of appetite or fondness of eating in general, of various food articles in particular. The latter fact justifies the corollary that in man, too, a meal taken without appetite is utilized by his organism (at least, as far as the pancreatic functions are concerned) to a far lesser degree than an "appetizing" meal, the cause lying in a scantier secretion of the juice (corresponding to a less vivid "dietetic excitement") in the former case comparatively with the latter. The primary maximum (*vide sub* 3) is probably depending upon (*a*) a more or less intense mental excitement in the very beginning of the meal; (*b*) mechanical stimulation of the duodenal mucous membrane by food ingested; and (*c*) a more or less considerable rise of the intra-abdominal tension (as determined by the food-mass introduced), which presses out an already "stored" juice both from the pancreatic cells and ducts. (10) A quite normal pancreatic juice (in dogs) possesses a very energetic digestive action. (Given 10 cub. c.c. of the juice and 2 decigrm of dried fibrin at 37° to 39° C.; the digestion begins in from five to ten minutes to completely dissolve fibrin in from fifteen to twenty minutes.) Its reaction is always alkaline; its specific gravity 1010 to 1015. On heating, the juice coagulates, giving a clot equal to three-fourths of the juice's volume. The proportion of solid constituents presents marked variations, of which those connected distinctly with taking food may be here noted. Thus, when equal to three per cent. in the first hour after a meal, the proportion gradually ascends to six per cent. about a seventh, to fall down to 3.5 per cent. about a tenth, and to reascend to 5.6 per cent. about a twelfth. (11) A normal "secretory tension" in a dog's pancreas amounts to 280 mm. of an aqueous, or 21.4

mm. of a mercurial column. That is, the tension is nearly as low as in a rabbit's pancreas (219 to 225 mm. of H_2O). It is highly probable that the pressure is about as insignificant in man too; hence the supposition is fully justified that in human catarrhal jaundice the pancreatic juice ceases to find its way into the bowel, or, at all events, is oozing out of the gland in but very trifling quantities.

The other part of Dr. Küvshinsky's work deals with the influence produced on the pancreatic secretion by alcohol, morphium, and cocaine.

Alcohol (six experiments) was invariably administered internally, on an empty stomach, in the shape of an ordinary (forty per cent.) "table *vodka*" (aquavit.), two tablespoonfuls at a time. The deductions may be condensed thus:

(1) *Vodka* always causes a very marked increase in the pancreatic secretion, which commences about half an hour after the ingestion, lasts for about one and a half hours, and then disappears in the course of a third hour; *e.g.*, in one case, an hourly amount of the juice, equal to 5 cub. c.c. before the experiment, rose to 20.25 cub. c.c. during the first, and to 22.9 cub. c.c. during the second hour after the administration of *vodka*.

(2) The juice excreted under those conditions has relatively low sp. gr. (1010), as well as a low proportion of solids (2.9 per cent.), but all the same it presents a high digestive power (dissolves fibrin in twenty minutes. *Cf. sub* 10.)

(3) Taking into consideration the fact that diluted alcohol gives rise to an increased secretion of the pancreatic juice as well as that of the gastric one and saliva, an internal use of spirits before and during meals is fully justified physiologically, and must be resorted to in cases of anæmia, debility, during convalescence, etc.

Hydrochlorate of Morphium was introduced either under the skin (thirteen experiments) or into the stomach (one experiment), the dose varying from $\frac{1}{12}$ to 1 grain. (1) The alkaloid invariably strikingly inhibits, or even arrests altogether, the pancreatic secretion, and prevents the occurrence of an after-meal increase. (*Vide sub* 3.)

(2) The intensity and duration of the effects are, in rough outlines, going parallel with the size of the doses administered, though any strict proportionality between the two factors cannot be made out. An injection of $\frac{1}{10}$ of a grain produces a pronounced decrease in the secretion already in two minutes, and a complete arrest in half an hour. About the end of an hour the secretion reappears, to gradually return to the normal condition in the course of the next hour. The dose of $\frac{1}{8}$ of a grain inhibits the secretion completely in twenty minutes, the stoppage lasting for one and a half-hours; $\frac{1}{4}$ of a grain arrests the secretion for three hours. As a rule, a complete inhibition of the salivary secretion takes place simultaneously.

Hydrochlorate of Cocaine (eight experiments) was employed hypodermically. (1) Like morphine, the drug develops invariably an inhibitory action on the pancreatic secretion, the effects being fairly pronounced, even after $\frac{1}{12}$ of a grain, though there are observed considerable individual peculiarities in regard to intensity and duration of the phenomenon.

(2) Still, speaking generally, the effects are corresponding to the size of doses administered. A 1-grain dose ($\frac{1}{10}$ of a grain per 1 kilo of the animal's weight) decreases a half-hourly amount of the juice from 13.5 cub. c.c. to 5.8 cub. c.c. during the first half-hour, to 4.6 in the second, the minimum being reached in forty minutes after the injection. A 1½-grain dose reduces the amount of the juice to a half (of that before the injection) in about ten minutes, and completely inhibits the secretion (for two minutes) in fourteen minutes. The effects, however, last for a far shorter period than in the case of morphine.—Valerius Idelson, *The Medical Chronicle*, March, 1889.

OBSERVATIONS ON INTESTINAL SURGERY.

At the meeting of the Royal Medical and Chirurgical Society, held March 12, 1889, Mr. F. Bowreman Jessett communicated a paper on the results obtained from experiments made as to a new method of operating on the intestine (*Lancet*, March 16, 1889). Certain operations on dogs had been conducted by Mr. Victor Horsley and himself, assisted by Dr. Dove. The operations performed were the following: 1. Gastro-enterostomy and jejuno-ileostomy by the method: Two plates of decalcified bone were prepared, each having a central oval opening and four perforations for sutures near the margin of that opening; sutures were passed through these perforations and fastened at the back. The operation was accomplished by making a longitudinal opening in the stomach and a corresponding opening in the jejunum as

high as possible; a bone plate was slipped into each viscus, and the threads passed through all the coats of the stomach on the one hand and the jejunum on the other; the corresponding threads of either plate were then tied firmly, the knots being imbedded between the peritoneal surface of the intestine and stomach; the parts were then dropped back into the abdomen and the parietal wound closed. Jejuno-ileostomy and ileo-ileostomy were performed in identically the same way. The operation could be easily accomplished in from fifteen to twenty minutes. 2. Circular enterorrhaphy, as in cases of intestinal wounds, malignant disease, typhoid ulcer, or in any case in which it was deemed advisable to remove a portion of the intestine. The following method was adopted: The portion of the intestine being removed, a narrow band of india-rubber was cut the exact size of the circumference of the upper portion of the divided gut; this was formed into a ring by two catgut sutures. This ring was next pushed into the gut and fastened round its free edge by a continuous catgut suture. Two threads, armed at either end with a common sewing-needle, were prepared. One thread was passed through the upper end of the india-rubber ring, now fixed in the intestine, and all the coats of the bowel, the needles being passed one on either side of the mesentery. The needles of the other thread were passed equidistant through the rubber ring and the coats of the intestine on the convex surface. The needles were next passed through the serous and muscular coats of the lower portion of the bowel, about an eighth of an inch from its cut edge, at corresponding points. These threads were drawn tightly, and the upper portion of intestine invaginated into the lower, so that the two peritoneal surfaces were in close contact, and the threads were then tied sufficiently firmly to prevent disinvagination. The bowel was dropped into the abdomen and the wound closed. 3. Ileo-colostomy, an operation especially applicable in cases of tumor or cancer of the colon or intussusception of the ileum into the cæcum and colon, was performed by lining the upper divided end of the intestine with an india-rubber band, in the same manner as described for circular enterorrhaphy. An incision was then made in the convex surface of the colon, and the threads passed through its muscular and serous coats. The threads were then drawn tightly, the small intestine slipped into the slit in the colon, and the threads tied sufficiently firmly to secure the parts in apposition. The distal portion of the divided intestine was invaginated into itself and fixed by a continuous suture passing through the serous and muscular coats only. This operation might also be performed by means of approximation decalcified bone disks. These operations Mr. Jessett had performed on dogs with the following results, viz.: Two cases of gastro-enterostomy with approximation disks; both recovered without bad symptoms. Five cases of jejuno-ileostomy with approximation disks; all recovered. One case of jejuno-ileostomy by implantation; died of secondary hemorrhage. Seven cases of enterorrhaphy by invagination; four recovered: the two first cases died directly from the operation, and one from obstruction caused by an enterolith. Three cases of ileo-colostomy by implantation; all recovered. To sum up, the results of operations performed by Dr. Senn and himself would be found to be as follows: Gastro-enterostomy: six cases; one death (mortality 16.6 per cent.). Jejuno-ileostomy by approximation disks: thirteen cases; one death (7.69 per cent.). Jejuno-ileostomy by the Czerny-Lembert suture: seven cases; five deaths (71.5 per cent.). Enterorrhaphy by invagination without omental flap: four cases; three deaths (75.6 per cent.). Enterorrhaphy by invagination with omental flap: twelve cases; three deaths (24.99 per cent.). Ileo-colostomy by implantation: nine cases; two deaths (22.2 per cent.). Ileo-colostomy by lateral apposition and Czerny-Lembert suture: seven cases; two deaths (28.6 per cent.). Ileo-colostomy by apposition with approximation disks: three cases; one death (thirty-three per cent.). By comparing these figures with those collected by Dr. Farquhar Curtis, himself, and others, it was found that the operation, as at present practised with the Czerny-Lembert method, showed a mortality of 86.6 per cent. as against 24.99 per cent. in those cases of enterorrhaphy performed by Senn's method of invagination, and 7.69 per cent. of those performed by means of approximation disks. The advantages claimed for this method of operating were simplicity, expedition, and better results. Simplicity: Mr. Jessett used only from four to six sutures, whereas by the Czerny-Lembert method fifty or sixty sutures were required. Expedition: He could perform the operation in about twenty minutes, whereas the present mode of operating required quite an hour and a half. Better results: He showed a mortality of 7.69 per cent. by Senn's method of approximation

disks, whereas of the operation by the Czerny-Lembert suture, performed under the same circumstances by the same operator on similar animals, the mortality was 75.6 per cent., or ten times as great.

AGARIC ACID.

Agaric acid is the subject of an experimental essay recently published by Professor HOFMEISTER, and analyzed by DR. BURGESS in the *Medical Chronicle* for March, 1889.

PURE agaric acid is a bibasic, triatomic homologue, of the malic acid series, having the formula $C_{14}H_{27}(OH)<^{CO\ OH}_{CO\ OH}$. Its solubility is but slight in cold, and fair in boiling water. The neutral alkaline salts dissolve readily, and, like the salts of the higher fatty acids, easily break up in solution into free acid and basic salt.

Locally its action is that of an irritant. Injected under the skin it causes intense pain, inflammation, and suppuration. When swallowed, large doses produce vomiting and diarrhœa.

The general action on cold-blooded animals is a gradually progressive central paralysis, weakening of the heart, and suppression, or marked depression, of the cutaneous secretion.

The only symptoms produced in dogs by large doses administered by the mouth were vomiting and diarrhœa. By subcutaneous and intravenous injections in rabbits, it was found that the vaso-motor and vagus centres were first stimulated and finally paralyzed. Death was caused by failure of respiration, and in animals subjected to artificial respiration, by failure of the heart.

The action of agaric acid on the secretion of sweat was investigated in cats by injecting subcutaneously the soda salt. The results placed beyond a doubt the anti-hydrotic action of the drug. The facts that in an animal under the influence of agaric acid, irritation of the sub-sciatic nerve had no effect on the secretion of sweat in the corresponding leg, and that this limb sweated profusely some minutes after the injection of pilocarpine, prove that the action is not central but peripheral.

With the exception of the anti-hydrotic effect, there is no similarity between the actions of atropine and agaric acid.

Malic acid and other members of higher fatty acid series were tried, and found to have no influence on the sweat-glands.

In regard to the therapeutic use of agaric acid, it is to be noted that the local irritation produced by the drug and its salts forbid the subcutaneous administrations. On the other hand, vomiting and diarrhœa need not be so dreaded when the pure drug is used as the experience of those who have tried the commercial agaricine might lead us to do.

Doses of 0.05, and in one case 0.1, given to phthisical patients caused slight temporary nausea and signs of intoxication. Doses of 0.02 and 0.03 were, without exception, well borne. The anhydrotic effect became first manifest hours after the drug was taken, and lasted for over twenty-four hours. Hence it is possible to get the full benefit of a large dose, and at the same time avoid the unpleasant effects, by repeating small doses at short intervals.

The large doses should not be ventured on unless it is quite certain that we are dealing with pure, white, well-crystallized agaric acid, which does not taste bitter when dissolved in weak alcohol, and forms a colorless solution in boiling water.

THE CHEMISTRY AND PHARMACOLOGY OF THE ORGANIC NITRITES.

A more complete pharmacological investigation of the organic nitrites would, without doubt, furnish therapeutics with results of the highest importance. Although two preparations are at present official that are supposed to depend for their therapeutic value upon the presence of such compounds,—the spiritis ætheris nitrosi, B. P., and amyl nitris, B. P.,—considerable obscurity exists as to their mode of action, consequent upon the want of uniformity in the results obtained by their use. Both preparations are, in fact, known to be more or less varying mixtures of the characteristic nitrites with other bodies, and it must be evident that exact conclusions as to the physiological action of their respective constituents cannot be arrived at until these have been separated in a chemically pure state and made the subject of careful experiment. The chemical portion of this work has been commenced in the newly-established research laboratory of the Pharmaceutical Society, and a few months since the director, Professor Dunstan, in conjunction with Mr. Dymond, described a convenient process for the preparation of pure ethyl nitrite, and of a fairly stable solution of the same. A comparison of the action of this pure solution of ethyl nitrite with that of the heterogeneous

solution known as spiritus ætheris nitrosi was undertaken by PROFESSOR LEECH, of Manchester, who reported his results to the Pharmaceutical Society at the evening meeting on Thursday, December 13. He stated that he had found no evidence that the two preparations differ at all in their therapeutic effects, provided the doses given contain an equivalent amount of ethyl nitrite; and it did not appear that the other constituents of spirit of nitrous ether have any therapeutic importance. Professor Leech is, therefore, of opinion that, since a fairly stable solution of pure ethyl nitrite is now available, the formula for its preparation should be included in the Pharmacopœia, and that the time-honored spiritus ætheris nitrosi should disappear from the list of official remedies. "Amyl nitris, B. P.," is at present the subject of a similar investigation, and some of the results were reported on the same occasion. Although the physiological experiments have not yet been completed, enough is known to warrant saying that they will probably affect the future of this preparation as an official remedy. The amyl nitrite of the Pharmacopœia is prepared by the action of "nitric or nitrous acid on amylic alcohol, which volatilizes between 262° and 270° F." As the fraction distilling between these limits of temperature might contain constituents of the crude fusel oil used other than pure amylic alcohol, and these would also be acted upon by the acid, there are evidently the conditions present for an admixture of other nitrites. Moreover, if nitric acid were used there would also be a formation of oxidation products. In fact, previous workers had reported the presence, besides unaltered amylic alcohol, of valeric aldehyde, valeric acid, and amyl valerate. Professor Dunstan and his co-workers, Messrs. Woolley and Williams, have also recognized in good commercial samples of "amyl nitrite" the presence of isobutyl nitrite, α-amyl nitrite, and β-amyl nitrite, and in an inferior sample there were also propyl nitrite and ethyl nitrite present. It was, therefore, determined to prepare specimens of these nitrites in a pure state and hand them over to competent workers for comparative experiments as to their physiological action. Pure isobutyl nitrite was prepared and a comparison of its action with that of α- and β-amyl nitrites was undertaken by Professor Cash, of Aberdeen. This investigation is still in progress; but, so far as it has gone at present, the results point to the unexpected conclusion that the isobutyl nitrite is the most active constituent of the official "amyl nitris," or, at any rate, that it is more prompt in its action on the blood-pressure, pulse-rate, and respiration in small animals than a mixture of the two amyl nitrites. The probability of this conclusion is also confirmed by some results obtained by Dr. Lauder Brunton, who, in comparing the action of amyl nitris, B. P., with that of a mixture of the amyl nitrites, found that the official preparation, which would have contained some isobutyl nitrite, produced the more marked effect on the human pulse-rate. It is evident that this combination of chemical with physiological research is full of promise for the future. Speaking on behalf of physiologists, Professor Michael Foster recognized the service that chemists might render by supplying them with "clean" drugs for their investigations. Just as it is known that the presence of a minute quantity of one metal in a very large quantity of another will affect the properties of the whole mass, so, he pointed out, the presence of even small impurities in a drug might vitiate all the results obtained from its use. Professor Burdon Sanderson also testified to the importance of this line of work, and expressed the hope that the research laboratory now established for the chemical side of pharmacological investigation by the Pharmaceutical Society might soon have its complement in a physiological laboratory established under the auspices of the great medical corporators.—*British Medical Journal*, December 22, 1888.

NUTMEG-POISONING.

Poisoning from nutmegs, or from their volatile oil, occurs more frequently than is thought, as the drug is credited by many women with arbortifacient properties. In the *Philadelphia Medical Times* for March 15, 1889, DR. WM. F. WAUGH reports the case of a married woman, who, suffering from dyspepsia, on the advice of a neighbor, ate five medium-sized nutmegs. No unpleasant sensations were experienced until half-past eight of the same day, when she became nauseated, giddy, and had a chill, accompanied by vomiting, headache, dryness of the mouth and throat, and a sore, strained sensation in the eyes. Her sight was somewhat affected, as she complained that everything appeared misty. When the chill passed off, slight fever and sweating followed, with intense, throbbing headache. There was at no time

any disposition to sleep. The next day the nausea had subsided; the pupils were unaffected; the pulse full and regular; but the headache continued, and it was a week before all the symptoms had disappeared. There was not at any time danger to the circulation or respiration. The report of this case, it is noticed, offers symptoms which are contradictions to the general idea as to the action of this drug. In the last edition of the U. S. Dispensatory nutmeg is credited with considerable narcotic power, while in the *American Journal of Pharmacy*, 1885, one and one-half nutmegs are stated to have caused in a woman stupor, followed by excitement, with evidences of collapse. Dr. H. C. Wood concluded from his experiments upon the lower animals that the oil of nutmeg is a powerful narcotic, with very much less sedative influence upon the heart than is possessed by most volatile oils. In the dog, he found that it caused profound sleep, with slowed respiration, and, in large doses, abolition of reflex activity.

THE PHYSIOLOGICAL EFFECTS OF ANTIPYRIN.

MESSRS. CROLAS and HUGOUNENQ report in the *Lyon Médical* for March 3, 1889, a series of experiments made to determine the physiological effects of antipyrin, their research being directed towards the determination of the influence of antipyrin on the number of red corpuscles; on the variations in volume of the urine, urea, and the actual amount of phosphoric acid, and on determining the toxic dose of antipyrin. These experiments seem to warrant the conclusion that in the normal state of the dog, doses of from 45 to 150 grains of antipyrin, continued during forty days, do not appear to sensibly diminish the number of the blood corpuscles, while spectroscopic examination in no case revealed the presence of methæmoglobin in the blood.

Their experiments under the second heading seem to indicate that antipyrin does not diminish the quantity of urine excreted in twenty-four hours, while their experiments as to the influence of antipyrin on the urea are not thoroughly concordant. It would seem that the urea, so far from diminishing under the influence of antipyrin, is actually increased. Phosphoric acid, which might be regarded as measuring the intensity of phenomena of denutrition, does not appear to be subject to notable variations, a fact which would seem worthy of attracting the attention of clinicians.

As regards the toxicity of antipyrin, their experiments seem to show that doses of from 75 to 150 grains of antipyrin may be given for fifty-two days at a time without producing any symptoms of poisoning. In attempting to determine the toxic dose, the authors gave at one time 150 grains, at another 300 grains, —a quantity corresponding to 1800 grains for a man,—and yet no marked effects were observed.

THE ACTION OF PARALDEHYDE.

In the *British Medical Journal*, March 9, 1889, DR. JOHN GORDON published an elaborate experimental investigation of the action of paraldehyde, of which the following is a summary: 1. Paraldehyde caused an increase in the excretion of urea. 2. It did not in any marked way affect the quantities of chlorides excreted. 3. It did not invariably increase the excretion of the fluid constituents of urine, but in the majority of cases which I have recorded it diminished them. 4. The odor of paraldehyde, when given in large doses, was found in the urine, showing that some of it probably passed unchanged through the system. 5. After the full dose of the drug the respirations were slowed, and rendered tranquil and steady. 6. It had no appreciable effect on temperature. 7. In cases of average health without sleeplessness it did not have any hypnotic influence except in large doses. 8. It caused no loss of appetite. 9. There was sometimes a tendency to perspiration under its influence, which atropine controlled. 10. The blood-pressure was only slightly reduced by the smaller doses, the large dose reducing it more, but only after distinct slowing of the respiration. 11. The pulse was slowed. 12. It diminished the reflex excitability of the spinal cord. 13. It had a peripheral influence in controlling sensation. 14. It speedily diminished, and in large doses destroyed, the irritability of motor nerves. 15. Equal doses diminished the excitability of motor nerves sooner than that of muscle. 16. Small doses first slightly excited and then diminished the excitability of muscle-substance. 17. Large doses speedily destroyed (temporarily) the irritability of muscle-substance. 18. There was a tendency to complete recovery in the muscle after a small dose, but seldom complete recovery after a large dose. 19. Curarized muscle showed increased excitability over non-curarized mus-

cle when treated with an equal dose of paraldehyde and equally stimulated.

The advantages of the drug as a hypnotic, to which group it distinctly belongs, depend on the following points: 1. It is not a cardiac depressant. 2. It has no marked period of toleration, since in some cases of insomnia from overwork the drug has been taken in the same dose for some months with equally good hypnotic results. 3. No marked craving for the drug seems to be induced by its use. 4. It does not exercise, except in large doses, a hypnotic effect on a person not suffering from sleeplessness; hence there is no probability of its abuse. 5. It has not a marked period of excitement before the hypnotic action takes place. 6. Its action is speedy, patients generally falling asleep within ten minutes after its administration. 7. The patients may be aroused while under its influence without any disagreeable or confused sensation. 8. The sleep which it produces is tranquil and quiet, with diminished respirations; this slowing of the respirations in many pulmonary diseases is of distinct advantage. 9. It is not liable to disorder the digestion. 10. In many cases it is gently laxative in its action.

From the experiments which were performed on the lower animals its use as a narcotic in cases of insomnia with slight pain is not contraindicated, since the author's experiments with frogs show that it controls to some extent the sensory nerves; and the experiments with cats prove that, in large but non-poisonous doses, it exercises a narcotic influence. And it is possible that, since a large amount of the drug is excreted by the lungs, its vapor may exercise a narcotic influence on the terminations of the sensory nerves of the lung-tissue while it is being expired.

Dr. Gordon's method of prescribing is in doses of from 40 to 60 minims for adults, well diluted with cinnamon water, adding a little sirup of tolu and compound tincture of cardamoms.

INTRAOCULAR WASHING AFTER THE EXTRACTION OF CATARACT.

M. MUGNIÉRY gives the following *résumé* of his graduation thesis, basing his results on the observations noted in the practice of Professor Gayet in Lyons (*Lyons Médical*, March 3, 1889). Lavage has been practised under five different indications: First, to prevent hypopyon. Second, to free the anterior chamber from collections of blood. Third, as an antiseptic. Fourth, to carry away the cortical mass during the operation of the cataract. Fifth, to produce by the regular contraction of the iris an exact coaptation of the wound.

For the employment of this mode of treatment, aseptic liquids are to be preferred to antiseptic liquids as less liable to reduce the vitality of the tissues. Two methods of practising this procedure may be employed: the one consists in thrusting the canula into the anterior chamber, through the corneal wound. This method, however, is regarded by the author to be not as efficacious as the other, in which the canula is not introduced into the eye, and is therefore less dangerous, both from the point of view of antiseptics and as less liable to produce traumatism. This method of treatment is claimed by the author to be especially advantageous in the after-treatment of operations for cataracts, as by it the pupil is freed, the whole operation is disinfected, and the use of instruments and the instillation of atropine are avoided. Increase of ocular tension and issue of the vitreous humor are the only contraindications to this treatment.

Reviews.

WOOD'S MEDICAL AND SURGICAL MONOGRAPHS. Consisting of original treatises and of complete reproductions in English of books and monographs selected from the latest literature of foreign countries, with all illustrations, etc. Published monthly. Vol. I., No. 2, February, 1889.
New York: William Wood & Co.

The publishers of this series are introducing to the American profession a remarkably good series of monographs. The three comprised in the present volume deserve more than a hasty reading. Every page is replete with valuable matter, and repays study. The article on "Gonorrhœal Infection in Women," by William Jap Sinclair, A.M., M.D., is not only a *résumé* of the recent publications on this subject, but contains much original matter derived from the author's own experience and experiment. This subject has only of recent years—and very recent—become one of vast importance, if one is to believe the observations of gynæcological operators. The author, Dr. Sinclair, is disposed to follow the footsteps of Dr. Noeggerath almost everywhere they lead: at one or two points he stops short, and at these points Dr. Noeggerath himself seems to have modified the positive statements of his earlier publications. Be this as it may, Dr. Sinclair regards the

early observations and views of Dr. Noeggerath as almost an inspiration in considering that at that time the gonococcus of Neisser had not been discovered, nor as yet the immense mass of observation collected by operators in this field. Indeed, matters have gone so far that any married man whose wife is of feeble health stands a good chance, if the gynæcologist is called in, of being held up as the author of her woes; and, while the exaggerated view that gonorrhœa in the male is never or almost never cured has had to be abandoned for the present, the like view in regard to the disease when it has once fastened upon the female sex is firmly held by the author and many others. So that now the male victim of this disorder has not so much to fear resulting stricture of the urethra as the resulting strictures of another character, affecting his reputation and domestic peace and happiness. The author, however, gives us very definite directions as to how the invasion of the pelvic organs in women may be averted, and many practical points in the treatment of gonorrhœa which will be found of great use.

Gonorrhœal puerperal fever is extensively discussed, and we feel sure that many readers will find this part of the work new and interesting: and that the author will be found to explain some mysterious cases of the kind, the memory of which will have remained in the practitioner's mind to annoy and perplex him, making him doubt either the value of antisepsis in midwifery or his own ability to apply it properly.

A very interesting chapter is that on the method of testing secretions to discover the gonococcus, after reading which one cannot but feel that some doubt may yet remain in regard to many reported observations and finds, when the extreme difficulty of detection is revealed. While one observer (Bumm) "has proved the existence of micro-organisms which cannot be distinguished by individual form alone from Neisser's gonococcus,"—describing five different varieties thus indistinguishable,—Dr. Gabriel Roux, by the use of Gram's staining-fluid, arrives at this result, that by it he "fixes the color in all micro-organisms as far as is known at present, excepting the gonococcus." Thus we see that even this evidence is negative, since there may exist other micro-organisms as yet unknown which also may disappear and refuse this staining process. One such organism hitherto unknown, but having its habitat in the vagina, gland of Bartholini, cervix uteri, or tubes, if it chance to behave in the presence of the staining-fluid in a similar manner, would vitiate all results hitherto obtained, unless there were other perfectly reliable evidence connecting the examined secretion of one sex with coexisting similar disease in the other,—and in that case the gonococcus can be ignored any way. But besides this portion of the work, the remaining chapters are of great value from a practical stand-point, and we believe the monograph, as a whole, to be perhaps the best summary of the recent advances of true scientific knowledge on the subject to which the reader can gain access.

The second of the three monographs comprised in this volume is "On Giddiness," by Thomas Grainger Stewart, M.D., and discusses its subject in all its varieties. The author defines giddiness as "arising from external conditions;" from "changes in the sensory structures;" from "changes in the conducting fibres in the central nervous system;" from "dyspepsia;" from "toxic causes;" from "causes of uncertain seat;" from "peripheral irritation;" from "mental causes;" and discusses each variety at length, giving a very interesting and clear chapter on Menière's disease and its varieties.

The last article is "A Critical Study of the Clinical Value of Albuminuria in Bright's Disease," by Dr. Pierre Jeanton, Paris. This is a very exhaustive study of the subject, in which the author devotes much space to the consideration of tests and their value, and will prove of great service to those awake to the great importance of the subject.

E. W. W.

HANDBOOK OF HISTORICAL AND GEOGRAPHICAL PHTHISIOLOGY WITH SPECIAL REFERENCE TO THE DISTRIBUTION OF CONSUMPTION IN THE UNITED STATES. Compiled and Arranged by Geo. A. Evans, M.D., etc.

New York: D. Appleton & Co., 1888.

The author's short historical sketch is excellently done for the brief space it occupies. This is followed by the real work of the book, —viz., the geographical distribution of phthisis. Here the author is a compiler of statistics; in fact, he claims to be nothing more. But the reader will find a vast amount of useful information in his pages other than mere figures, averages, and percentages. From the "Handbook of Geographical and Historical Pathology" of Hirsch he obtains his statistics concerning the death-rate of pulmonary phthisis in countries other than the United States. To these he has added much valuable matter

bearing upon the climatology, etc., of foreign countries. "A remarkable fact," he says, "is its rarity in many of the islands and coast districts within the more northern latitudes, such as Iceland, the Faroe Islands, the Hebrides, and Shetland Islands, and places in Norway." This point he pursues still further, and with reason, since this is the age of travel, and the consumptive, if pecuniarily able, is exiled as soon as possible, sent to some noted resort selected from the accessible places where consumption is unknown or rare. Some of the best places are beyond reach. Iceland, for instance, holds out no inducements to counterbalance the awful depression of its climate and cold. The steppes of Asia, where it is said to be unknown, are too remote, and too real an exile. Better death to most than such a life. Of Switzerland he says, "Few countries of Europe enjoy, on the whole, so favorable conditions. Contrary to general belief, phthisis is "prevalent to a very great extent on the central plateau of Spain, as well as in the larger parts of Barcelona, Valencia, Cadiz, Gibraltar, and Lisbon. According to the author's collected statistics, Italy in its northern regions is unfavorable too, but in its southern a good resort for the consumptive. In fact, a cursory glance at the author's tables impresses one with the view that the most excellent places of the earth for the phthisical sufferer are generally the most remote and inaccessible. Then, too, statistics are in this instance peculiarly unreliable, and are by no means constant. Since the healthy resort of a score of years ago may be now filled with tuberculous taint brought to it by those seeking a prolongation of life, recent years, therefore, have in many instances modified for the worse the early favorable statistics of many places, as, for instance, Australia. But to turn to this western world. While Iceland, as stated above, is almost exempt, North Greenland tables show it to be one of the commonest causes of death. At trading stations on Hudson's Bay "phthisis is prevalent among the scanty population to an enormous extent." The same is true of the Aleutian Islands and Alaska. Mexico in its highlands is still, according to the author, a good place for a future sanitarium, while the West Indies afford scarcely any immunity. The author then examines the United States, and we feel sure that a knowledge of his facts will upset many preconceived opinions, and in addition to this a study of the book will enable the physician to select for his phthisical patients places equally good with distant resorts, but much nearer and more accessible,—a *very* desirable thing in these days, when fashion, ruling as in other fields, is too apt to banish the sick to certain well-known and already crowded resorts. E. W. W.

A Handbook of Therapeutics. By Sidney Ringer, M.D., etc. Twelfth edition.
New York: William Wood & Co., 1889.

To arrive in a few years at a twelfth edition a book nowadays must possess intrinsic value. So many new competitors drive off the field all old books, to seek a hiding-place in unused corners and dusty shelves. The secret of Dr. Ringer's success lies in the fact that he attacks his problem from a different point from that usually occupied by the therapeutist, and from a point which seems more practical to the average reader, who is nine times in ten a hard-worked practitioner, by no means scientific, but always seeking something to benefit the cases in hand. He "dwells much more on the indications for the use of drugs in disease than on their physiological action;" and alas! for human nature, he appeals to more readers than the scientific therapeutist from his higher stand-point. In fact, the author's introduction may be called a pæan in praise of symptomatic treatment, for he argues in its favor; in fact, he claims it as a necessity. "Of late years, since attention has been more drawn to the significance of physical signs, too little heed seems to me to be paid to the detection and appreciation of symptoms, objective and subjective." "Physical signs are soon learned, while it requires a longer time, more patience, and a more discriminating observation to appreciate the meaning and to estimate the value of symptoms." "Important though physical signs undoubtedly are, yet symptoms, especially objective symptoms, are far more valuable." "Physical signs, as a rule, help us to detect only coarse and decided changes, and are chiefly useful in diagnosis, while symptoms are far more useful guides in prognosis and in treatment." And still further he says, "When we have accurately diagnosed the disease, we treat, in most cases, the secondary effects, . . . and these effects generally make themselves apparent solely as symptoms." We have quoted thus from the author's own words that our readers may understand the exact status of the author in the matter. In this edition we miss the mention of some drugs much noticed in previous editions, and mark the introduction of many new ones, concerning which the medical world is yet uncertain and eager to hear

additional argument. Throughout the book there is a delightful mingling of clinical instruction and empirical hints, with the real discussion of the action of the remedies under consideration. However one may agree or dissent from the author, one is sure to derive some instruction,—to find out something new or suggestive from his pages; in fact, "Ringer's Therapeutics" fills a gap between the scientific therapeutics of to-day and the totally empirical therapeutics of the yesterday of medicine.

E. W. W.

WOOD'S MEDICAL AND SURGICAL MONOGRAPHS. Vol. I., No. 1. Published Monthly. $10.00 a year. Single copies $1.00.
New York: Wm. Wood & Co., January, 1889.

The first of the "original treatises and of complete reproductions in English of books and monographs selected from the latest literature of foreign countries, with all illustrations, etc.," is before us, and bids fair to prove the best, so far as one can judge from the first two volumes of the monthly publications of the firm from which it issues. The January volume contains three monographs,—"The Pedigree of Diseases," by Jonathan Hutchinson, F.R.S.; "Common diseases of the Skin," by Robt. M. Senion, M.D.; "Varieties and Treatment of Bronchitis," by Dr. Ferraud.

"The Pedigree of Disease" is as attractive as its title; it is one of those articles—seldom seen—often longed for, which show how much may be accomplished by a polished writer of large experience and wide range of thought when he turns his attention to some general medical topic. To write such an article a man must be far more than a mere specialist or a mere routine practitioner of even the most extensive practice; he must be a man of thought with highly cultivated powers of reasoning and observation. And the article, when written and read and remembered, will always prove its value by lifting the true reader to the author's higher plane, and giving him a view of every-day objects so varied and so novel that he scarcely recognizes them. The author discusses idiosyncrasy, temperaments, congenital peculiarities, diathesis, and all the many points that his subject brings up, enforcing them with illustrations drawn from the most extensive observation and tenacious memory; and while we cannot quote from his pages or portray his arguments or conclusions, the reader will, we are sure, thoroughly appreciate his work when once he begins its perusal.

"Common Diseases of the Skin" is a plain, practical treatise, wherein the author strives as much as possible to simplify the sub-divisions of the dermatologist, and instruct the unskilled and unspecial in the art of cure. We know no simpler and more useful manual for the treatment of "common diseases of the skin;" as for the uncommon ones, the few that the author leaves in this class we can cheerfully surrender to the specialist the more readily, since they are apt to be incurable.

"Clinical Lectures on Bronchitis" is principally devoted to a discussion of what the author terms "congestive bronchitis," which he differentiates "from both catarrh and inflammation;" he divides it into many varieties and goes minutely into its treatment.

"Catarrhal Bronchitis and Inflammatory Bronchitis," with the treatment of each variety, form the balance of the book, which abounds with formulæ, some of which are apparently novel to the American reader, and we should judge of much value, and, in short, the three articles in this volume certainly form a valuable addition to practical medical literature.

E. W. W.

HANDBOOK OF SKIN-DISEASES. By Arthur Van Harlingen, M.D., Professor of Skin-Diseases in the Philadelphia Polyclinic, Clinical Lecturer on Dermatology in the Jefferson Medical College. Second edition. Revised and enlarged. Small 8vo, pp 410.
Philadelphia: P. Blakiston, Son & Co., 1889.

The second edition of Dr. Van Harlingen's handbook contains almost double the amount of matter presented in the first publication. This increase has been chiefly in the matter of diagnosis and treatment, especially the former. The subject of therapeutics was fully and intelligently discussed in the first edition, and the changes made consist, in the main, in the incorporation of the advances made in this branch in the past few years. It was this department of the subject, in fact, that won for the book, and deservedly, such favorable recognition, presenting, as it did, clear and concise directions for the management of the different diseases, and given in a manner that the general physician must have found a pleasant change from the bewildering discursiveness of similar and many larger works. This claim to recognition, so pronounced in the first edition, has been even strengthened in the second. The author has, moreover, in this revision and enlargement, evidently had in view the simplification of the differential diagnosis, and, in endeavoring to bring this part of the subject

up to the plane of the therapeutic portion, has succeeded in producing an excellent and well-balanced handbook. The busy practitioner will find it a thoroughly safe and practical guide in the recognition and treatment of this troublesome class of diseases.

Correspondence.

PARIS.

(From our Special Correspondent.)

Large Doses of Sulphonal needed in France— Saccharin Good as a Medicine, but Bad as a Food—Its Use as a Mild Caustic for Thrush—The Walking Mania, a Form of Epilepsy—The Resorcin Spray in Diphtheria—Better Off without a Diploma.

Experiments with sulphonal, the much-controverted hypnotic, still continue, and although the subject is far from exhausted, the discussion has brought out many facts important for a correct estimation of the new remedy's value. A recent addition to this branch of therapeutics has been contributed by Dr. Mairet, a professor at the Montpellier Faculty, in collaboration with Dr. Salvetat, a graduate of the same college. Not to repeat what has been already said respecting the chemical properties of sulphonal, its unfortunate insolubility, and its physiological effects on animals and some patients, recorded by various German investigators, the following were the results observed by Dr. Salvetat, on experimenting on himself and some of his friends. Doses, varying from 1 to 2 grammes (15 to 30 grains), never afforded hypnotic effects; 3 grammes caused in some subjects slight drowsiness, in others nothing whatever. It required 4 grammes (1 drachm) to affect Dr. Salvetat, and rather unpleasantly too. The dose was taken at 5 P.M.; at 9 a feeling of inebriety overtook him, and at 9.30 sleep, which lasted until 8 next morning, when he was awakened by a servant; half an hour later he slept for two hours more. At 11.15 he had no appetite for breakfast, and felt like vomiting; in the afternoon he took another nap of about half an hour, and was still dizzy and tired, but well otherwise, and ate a hearty dinner, after which he slept all night as usual. The chief difference between German and French experimenters is in respect to the dose. While Drs. Kast and Rosin consider 2 grammes of sulphonal the proper quantity to be administered as a hypnotic, Drs. Salvetat and Mairet are of opinion that 4 grammes at least are necessary, a very strange discordance, considering that usually the difference lies the other way, French doses being in general very small. But as the good faith and skill of the investigators can in neither case be called to question, it must be presumed we are dealing here with race idiosyncrasies. Dr. Mairet has related among other the following typical instances: X., a man in good health, was, at 5 P.M. on a Thursday, given 4 grammes of sulphonal. He experienced no effect therefrom either during the night or the following day. On Friday 5 grammes more were given; the next morning his eyes were watery, his face weary, and his head dizzy. During the day he looked like a drunken man, but had no nausea or loss of appetite; he only felt sleepy. On Saturday night no sulphonal was given. X. slept well at night; but on Sunday morning the disturbances observed the day previous were still more noticeable, the difficulty in standing and titubation having increased, as well as somnolence and prostration. Yet his appetite was not impaired. On Monday morning, with the exception of slight hesitation in walking, all symptoms had disappeared, and by night he was in his usual state. The other subject, Y., took on a Thursday night 4 grammes of sulphonal, and experienced nothing either during the night or the day following. On Friday he was given 5 grammes, enjoyed a good night's rest, and the next day presented nothing abnormal in behavior or appearance, except a slight redness of the eyelids. On Saturday, at 5.15 P.M. he was again given 5 grammes of sulphonal. Soon after, while working, he dropped into a chair and fell asleep. At 8.30, on being aroused to go to bed, he rose half-dazed, stepped about reeling, saying, "I feel as if I were drunk," and with a maudlin smile, and his cap on one side of his head, staggered to his bed, where he enjoyed sound sleep all night. During the whole day following he acted like a drunken man,—would drop the objects he held in his hands, reel around the rooms, fall asleep when sitting, and get entangled with chairs and tables when walking, but never lost a meal for all that. After this, although no more sulphonal was given, the symptoms lasted until Tuesday, gradually decreasing, and finally disappearing on that evening. One point strikingly illustrated by the foregoing instances is the length of time necessary for the absorption as well as for the elimination of sulphonal. Its insolubility and indiffer-

ence to chemical agents, easily account for this slowness of action; they also indicate that sulphonal is essentially a cumulative medicine. But another interesting feature of Drs. Mairet and Salvetat's work is that unless they have been dealing with a different chemical, the nervous Frenchman needs a larger dose than his more phlegmatic neighbor on the other side of the Rhine.

After considerable discussion respecting saccharin, medical and sanitary authorities here have come to an agreement,—a compromise, if you like,—which was recently set forth quite fairly by Dr. Dujardin-Beaumetz in a public declaration. He said that, therapeutically, saccharin is a valuable addition to materia medica, but, as an article of food, it should be prohibited, *not because it is poisonous* (the italics are his), but because it is not an aliment, and can have no other possible use but to deceive the consumer. "Hence," he added, "it is possible without ceasing to be logical for one to condemn saccharin as a fraud in general alimentation, and yet to approve of it as a valuable medicine. Such is the stand I have always taken." As most readers of the THERAPEUTIC GAZETTE probably know, the importation of saccharin in France is now prohibited, and public opinion has supported the government in its action, for people here will not have saccharin in their currant jelly, or "sirop d'orgeat," if they can help it. But, as a medicine, that is a different thing. It is used more and more, and has proved of real value in many cases. For instance, Dr. Fourier, of Compiègne, has employed it with success in cases of aphthæ dependent upon measles. On painting them with a saccharin solution, he caused eight times the plates to disappear within twenty-four or thirty-six hours; only twice did they resist three days, and even then he had good reason to suspect the application was not performed properly. The solution should be as follows:

Saccharin, 1 gramme;
Alcohol, 50 grammes.

Dissolve. To make the wash, add a teaspoonful of the solution to half a tumblerful of water, and apply with a camel's-hair brush five times a day. It is unnecessary to use more concentrated preparations. In fact, they are almost dangerous, as one day Pharmacist Guilluy, while making the alcoholic solution for Dr. Fourier, had the curiosity to taste it by dipping his finger in and bringing it to his mouth. As a consequence, on the same evening, he felt his whole mouth burning hot, and the following morning had a severe aphthous eruption, which lasted for six days. It soon disappeared, however, and left no trace. The foregoing, by the way, shows that saccharin, like salicylic acid and other similar compounds with sweet taste and bland names, are caustics of no mean efficiency.

Dr. Charcot always retains the specialty of strange cases. The other day, at the Salpétrière, while treating of a variety of epilepsy which deserves the name of walking mania, he related the following typical instance: The patient, M., was employed in a Paris foundery to make deliveries of bronze articles in the city. He was accompanied with a driver to mind the horses and wagon, while he dealt with the customer and collected the money. For nineteen years he has been working for the same firm. On January 18, in the evening, after delivering the last lot of goods, he disappeared, leaving the driver to go back to the store alone. From this moment to January 26 the unfortunate M. lost all consciousness of his actions, when, at 2 P.M. "he awoke," as he said, standing on a bridge in an unknown town, and listening to the brass band of a passing regiment. On coming to his senses, he noticed his clothes were clean, his shoes in good condition, and no bodily harm had befallen him, but all recollection of his doings was lost, and he had no idea of the place where he happened to be. Unwilling to cause remarks by asking the plain question, previous experience having taught him better, he only inquired of the way to the railroad station, and there ascertained he was at Brest, some three hundred and sixty-five miles from Paris. Now counting his money, he found he had seven hundred francs left out of nine hundred he had collected, showing he had spent forty dollars in eight days, nothing out of the way, considering the railroad journey. Thus far, so good. Only, as no train left for Paris before night, M. bethought himself, to guard against another walking fit, of placing himself under the protection of the law, a dangerous proceeding in most civilized countries. The law in the present instance appeared in the shape of a "bon gendarme," to whom M. confessed his quandary, showing at the same time several vouchers, among which a certificate signed by Dr. Charcot. The gendarme had never heard of Dr. Charcot; but, with characteristic acuity, replied, "He knew that story;" and promptly locked up the Parisian. Six days were necessary to clear up the case, as

the Paris house had changed hands, and the new firm, being imperfectly acquainted with the man's antecedents, telegraphed at first to hold the prisoner. It was only on February 1 that M. was set free, but he lost his situation. The story is, no doubt, a strange one, and might lead to a different interpretation, were it not that Dr. Charcot has long been acquainted with the patient, knows him to be a temperate, steady man, married, and the father of two children, and has had him under treatment before for similar fits of unconsciousness, only less serious. The case, according to the celebrated specialist, is a form of epilepsy, and one of the reasons for the diagnosis is that the patient has been on previous occasions successfully treated with bromide of potassium. He had M. under his care for nearly four years, during which time three abscesses occurred. The bromide treatment gradually reduced the fits and their duration, to such an extent that the medicine was stopped last September. The patient was considered cured when the last outbreak took place. Verily, there are good times in store yet for the great American tramp. But policemen are so incredulous.

In consequence of Dr. Roux and Yversin's discoveries respecting diphtheria, local applications are now much thought of. At a meeting of the Society of Practical Medicine, Dr. Callias reported he had obtained good results from a five to ten per cent. solution of resorcin applied with a soft camel's-hair pencil every hour, night and day, in serious cases, and every two hours in mild ones. A one or two per cent. solution is to be at the same time sent with an atomizer into the mouth and nose, so that the spray shall penetrate to the larynx. Resorcin is thus easily exhibited, owing to its sweet taste, great solubility, and slight causticity. Dr. Alexander having expressed some doubts as to the complete harmlessness of resorcin, Dr. Cadet de Gassicourt remarked that in his hospital service he had used resorcin solutions in all degrees of concentration, without untoward results. At the same time he had some misgivings in regard to its efficacy in dangerous cases of diphtheria.

People like to be humbugged. Last week Dr. Cicard appeared before the Seine Correctional Tribunal on the charge of illegally practising medicine. The evidence showed he had a large and lucrative practice, and employed strange remedies. One witness, for instance, testified that the doctor wrote cabalistic signs on his prescriptions; another, that he had been ordered by him to hold a copper rod with both hands until it fell off; and still another, that he had been advised to stand on one leg. On being asked what he had to say, defendant replied he had an excellent defence in the shape of a simple document, which he would show to the court on condition the secret be kept. The judge having declined to make any such promise, after much hesitation the poor fellow reluctantly handed to the court a folded parchment, remarking he took this step only to avoid being sent to prison. The document staggered the judge, as it proved Dr. Cicard's medical diploma, in good and due form. Of course defendant had to be acquitted; but, on being asked why he had allowed himself to be prosecuted and risked going to jail, he replied that for five years after obtaining his diploma he had vainly tried to make a living by regular practice. Then, to avoid starvation, he hit upon the quackery dodge, and made considerable money. But now, that he had been obliged to show his diploma, the trick would work no longer, and he would be obliged to move to some other locality, where he would not be known as a regular physician.

PARIS, March 22, 1889.

BERLIN.

(From an Occasional Correspondent.)

Experiments with the Bacillus Choleræ—Weigert's Treatment of Consumption—Unique Cases—Bouillon Capsules—A Fatal Bet—Professor Liebreich's Jubilee—Medical Meetings.

Professor Koch, in conjunction with Professor Loewenthal, has recently made some interesting and valuable researches concerning the behavior of the bacillus of cholera on various culture soils. Loewenthal has succeeded in proving beyond doubt that the bacillus of cholera loses the capacity to produce its specific ptomaïne by prolonged pure cultures, but regains this capacity in presence of pancreatic juice. Again, he found that the bacillus in presence of pancreatic juice, and then only, could be destroyed by salol. Loewenthal made these observations first outside of the animal organism, and was naturally anxious to find whether this peculiar behavior of the bacillus, in presence of pancreatic juice and salol, could be verified also on the living animal. It is well known that it is a matter of great difficulty to produce cholera artificially in animals. Koch and French, experimenters, particularly Nicati

and Rietsch, of Marseilles, succeeded in this only, after many failures, after previously having rendered the stomach alkaline by large doses of sodium and the intestines nearly immovable by opium. This procedure allowed the bacilli, which otherwise invariably perish in the gastric juice, to reach the intestines and develop themselves there. Loewenthal used for his experiments guinea-pigs. The first animal was treated after Koch's plan, with sodium and opium, to illustrate the inocuousness of that ingestion; the second was treated likewise, and received besides 2 c.c. of a pure culture of cholera-bacilli in bouillon *per os*. This animal perished after forty-eight hours, under the usual symptoms of cholera. The third animal received the same treatment as the two other guinea-pigs, and, besides, 5 c.c. of the same pure culture; it perished in twenty-four hours. The fourth animal received 10 c.c. of the pure culture, and immediately after 20 cg. of salol. This animal did not get sick at all. In a second series of experiments Loewenthal gave to two mice bacilli flour impregnated with cholera-bacilli, as result of which both animals grew sick. One of the animals was left to itself, and the other received a dose of salol. This animal grew gradually better, and recovered completely ten hours after the ingestion of salol and twenty-five hours after the ingestion of the bacilli, while the other mouse perished in twenty-five hours. In a third series of experiments, Loewenthal gave to four guinea-pigs bouillon à la cholera-bacillus and flour, without preparation of the stomach and intestines, with sodium and opium. Two of the animals received the next day 20 cg. of salol; the two others received no salol. Of the two latter animals one only died, while the other recovered, which was also the case with the two animals which had received salol. It cannot be said with certainty whether the one animal succumbed to cholera or to another disease. As Professor Loewenthal's researches without and within the animal organism evinced the same behavior of the cholera-bacilli in presence of salol, we are justified in assuming that salol has properties antagonistic to the specific ptomaïne of the cholera-bacilli. Loewenthal intends to try the exhibition of salol in India, where cholera is endemic and epidemic, and has already addressed physicians, resident in India, on this highly important matter.

Weigert's apparatus for the cure of consumption by means of the destruction of the tubercle-bacilli engaged the interest of the Berlin Polytechnical Society at its meeting of February 8. The principle of the process and apparatus is the killing of the specific tubercular germs in the lungs by a high temperature. Weigert's apparatus consists of a metallic globe, into which a Bunsen burner is fitted. Over this globe a second one is placed so as to leave an interval of one centimetre between the two globes. The air enters the interspace between the two globes by means of small apertures, becomes heated on the wall of the inner globe by the Bunsen burner up to a temperature of 280° C. (568° F.), and then enters a mouth-piece, which has ingeniously-constructed valves for inspiration and expiration of air. These valves produce, of course, a very considerable loss of temperature, the patient inhaling air of about 160° C. (350° F.). This high temperature is singularly well borne by the patients, and the results obtained thus far appear encouraging. Krull, a practitioner of Mecklenburg, has some time ago advocated a similar plan of treatment of consumption,—viz., the introduction of sterilized, damp air of high temperature. His view was that a defective nutrition of the lungs favored the admission and development of the tubercle-bacilli, and that by an increase of the blood-supply of the lungs the local powers of resistance and recuperation could be materially heightened. The result of the introduction of air of the above description into the lungs is a vascular dilatation, and the passage of a greater quantity of blood without a simultaneous cardiac excitation. As damp air heated to a certain height does not decrease the elasticity of the blood-vessels, each cardiac contraction carries off the quantity of the blood previously admitted to the part. It is evident that through this increased admission and expulsion of blood a greater quantity of it will be propelled into the capillaries of the lungs, and that an augmented oxidation of blood will take place in a given time. Simultaneously, the discharge of carbonic acid gas is increased and the process of pulmonary nutrition is stimulated. The danger of pulmonary hemorrhage is, strange to say, not only not increased by Krull's inhalations; but, by equalizing dangerous centres of blood stagnation, is actually diminished.

The vastness of the medical domain is strikingly illustrated by the so-called rare or unique cases, which, instead of decreasing, as we might naturally suppose, appear to be steadily on the increase. A large medical centre like Berlin is, of course, a fruitful soil for "unique

cases." The singular case of acromegaly, or giant's growth, which Professor Virchow presented and described recently to the Berlin Medical Society, has probably been already reported in American journals. I will, therefore, abstain from further details, and only add that a Prussian thaler, which has almost the diameter of an American dollar, fitted very neatly into the ring of this human "Jumbo." A German Barnum, by the way, has undertaken to exhibit the giant to the public. Another singular case came recently under the observation of Professor Leyden in the Royal Charité. A young lady swallowed a piece of bone of considerable dimensions, which produced serious paroxysms of coughing, but remained in the throat. A physician examined the patient with the œsophageal bougie, but was unable to detect any foreign body. The cough and severe pains continued for six months. Professor Leyden took charge of the case after that, and diagnosed bronchial catarrh with asthmatic symptoms. His treatment, however, proved absolutely useless. He was about to send the patient to a southern watering-place, probably to get rid of the case, when one day the lady came to him, bright and happy, and told him that she was "all right," a large and pointed bone having come up in a severe and very painful paroxysm of coughing. Professor Leyden said it was miraculous that a bone of such dimensions could have lodged for eight and a half months in the part without producing any serious disorders. Though it is impossible to exactly say where the bone was lodged, it was, in Professor Leyden's view, probable that it became fixed with its point in the mucous membrane of the trachea, or, even deeper, in a branch of the bronchi.

A similar case came this week under the observation of Professor Bardeleben, of the Charité. A patient, 54 years of age, suffered from chronic hoarseness, for which no valid cause could be ascertained. After the death of the patient the cause became very clear. Under the right vocal cord there was found a one-mark piece (about the size of a quarter of a dollar), which was wholly black. The patient had never said anything about the swallowing of the coin, and it is questionable whether he knew anything about it himself.

Two other singular cases are reported by Professor Fürbringer, of the City Hospital, Friedrichshain. A young lady had died in the hospital under obscure peritonitic symptoms, and the autopsy revealed at the junction of the small and large intestines two hundred and fifty cherry-kernels and three plum-stones. The diagnosis has been uncertain, though a neoplasm of the intestines was looked for. The second case was that of a man, who evacuated one day ninety-eight plum-stones, and the following day one hundred and thirty-seven plum-stones, in all two hundred and thirty-five. The malady, which could not be properly diagnosticated previously, disappeared completely. In both cases the kernels and stones were not ingested at once, but gradually and probably in a long course of time.

The numerous services which the kitchen and the dinner-table have derived from the progress of chemical science have again been increased by a valuable innovation,—viz., the bouillon-capsules, invented by Dr. Quaglio. The capsules have been officially examined by Dr. Bischoff, the city chemist of Berlin, and have been pronounced as an acquisition to the household and of particular value for the sick-room. They contain the essential constituents of a nutritive bouillon in the smallest volume. The extractive matters of meat, fat, spices, and salt are united in proper proportions, and enclosed in gelatin capsules. These capsules are simply placed in hot water, where they dissolve immediately, and furnish a perfect bouillon, which cannot be distinguished from bouillon freshly prepared.*

One of those wretched bets on extraordinary feats in eating or drinking has this week caused the death of a participant. A butcher bet against two "weisse" (weiss beer) that he could eat up the contents of a mustard-glass, containing half a litre. The result was a terrible burning in the stomach, severe vomiting, and death on the same day.

A great reception was tendered yesterday by the medical world of Berlin to Professor Liebreich, the occasion being the fiftieth anniversary of that well-known chemist and parmacologist. Liebreich's name is nearly as well known in America as in Europe. His principal merits are the discovery of hydrate of chloral and its introduction as a hypnotic, the discovery of two new anæsthetics,—viz., butyl chloral, and chloride of ethyl and of lanolin. He is the editor of the *Therapeutische Monatshefte* and chief of the Pharmacological Institute of the Berlin University. Professor Liebreich has, besides, the distinction of being the most dreaded examiner of the Berlin faculty, a distinction which he shares, I be-

* The capsules can be obtained from Quaglio, Schiffbauer, Damm 16, Berlin.

lieve, with one of the editors of the THERAPEUTIC GAZETTE, who occupies the same position in a Philadelphia school.

The time of medical meetings and congresses, which are really a feature of medical life in Germany, will soon be on hand. The first and principal meeting of the year is the eighth Congress for Internal Medicine, which will take place, as annually, in Wiesbaden, April 15–18, under the presidency of Liebermeister, of Tübingen. Subjects of the highest interest will be discussed by the most celebrated of German clinicians. We merely mention the following: 1. "Ileus and its Treatment," Curschmann; 2. "Gout and its Treatment," Ebstein; 3. "The Functions of the Stomach in Tubercular Phthisis," Immermann; 4. "Male Impotence," Fürbringer; 5. "Preparation and Action of Medicines," Lewin. Your correspondent will attend this important Congress, and for the benefit of the subscribers of the THERAPEUTIC GAZETTE will stenograph all essential parts of the discussions.

BERLIN.

(From our Special Correspondent.)

From the time when the investigations of Robert Koch first furnished us with a scientific and probable theory as to the etiology of tuberculosis, there has been no lack of therapeutic procedures proposed, which, resting on the facts so obtained, should prevent the development of the tubercular bacillus within the system. As yet, however, they have all led to no result; fortunately, however, the results of investigations as to the prophylactic treatment of tuberculosis have been somewhat more successful. With the better knowledge of the attributes of the cause of tuberculosis, we are becoming more and more fitted for the discovery of some measure which may protect the economy from the invasion of these bacilli. Very recently a pupil of Koch, who, for a number of years has been carrying on most careful and exact studies in the Berlin Hygienic Institute, published a communication in the *Zeitschrift für Hygiene* containing the results of his studies as to the conditions of development of the bacillus of tuberculosis outside the animal body. We may assume that these studies of Dr. Cornet are already well known, and therefore will only briefly recapitulate their main features. Dr. Cornet inoculated three hundred and eighty-eight guinea-pigs with one hundred and forty-five different kinds of dust; of these, three hundred and eleven animals were inoculated with dust taken from rooms occupied by phthisical patients. Of these latter, one hundred and sixty died soon after infection through the disease (peritonitis, etc.) produced by the injection. Fifty-nine, or one-fifth of the animals inoculated, were found to be tuberculous when killed; eighty-five were normal. Of the seventy-seven animals, on the other hand, which were inoculated with dust from other localities, thirty-seven died from various diseases; in the remaining forty no pathological process could be discovered when they were killed.

At the meeting of the Berlin Medical Society, held on March 13 of this year, Dr. Cornet gave an address, in which he extended his conclusions from the results obtained in his more recent observations, and claimed that his results warranted him in formulating rules for the actual prophylaxis of tuberculosis. In the last few years there has been much talk about the "ubiquity" of the bacillus tuberculosis, and the conclusion drawn that those who escape the action of this infection are mainly protected through some individual peculiarity of disposition. It has been overlooked, however, in formulating these conclusions, that the universal distribution of the bacillus by no means presupposes the necessity for the existence of these bacilli in a free condition in the air. That, however, the air is the chief carrier of the infective virus of phthisis, is regarded by Dr. Cornet as having been absolutely demonstrated. All the tubercular bacilli which reach the atmosphere must have originated within the animal body, and this purely parasitic nature of the bacilli is the starting-point on which the theory of prophylaxis rests. The object to be attained, therefore, is evidently to deprive the bacilli of all noxious properties immediately on their exit from the organism. Although without doubt the fæces and urine in certain cases contain bacilli, yet it is generally admitted that there is no marked danger of infection from these sources, since it may be believed that in these excreta the tubercular bacilli would be rapidly destroyed by the bacteria of putrefaction. Infection through the milk and flesh of tubercular animals introduced within the digestive tract is more worthy of attention; but by far the most frequent source of infection is without doubt the tuberculous individual in whom the pathological process is located in the lungs. Here the expired air as the vehicle for this virus does not come under consideration, since the investi-

gations of Naeglé and others have shown that neither evaporation from the moist surface of the respiratory tract, or the forcing over it of a violent current of air, as in coughing, is able to carry the bacteria into the atmosphere. Tuberculous individuals, therefore, are only dangerous through their sputum, and only then when it is dry and so distributed through the atmosphere that it may mix with the inspired air. That the healthy respiratory tract possesses means of protecting itself from the entrance of infective matter is clearly established, while it is also proved beyond doubt that under certain circumstances the respiratory passages may serve as the point of entrance of this virus to the lungs, and there be the starting-point of the phthisical process. If we now attempt to determine to what degree phthisical individuals, under ordinary circumstances, run the risk of causing the distribution of the bacillus, we will find that if phthisical patients started with the firm idea of destroying themselves and all around them as rapidly and as certainly as possible, they could not better accomplish their object than through the practices which we are every day encountering: for on all sides we find the universal habit of depositing the expectoration either on the floor or in the pocket-handkerchief,—a procedure which is of all best calculated to favor the distribution of the sputum in dust form through the atmosphere. The sputum kept in the pocket, at the temperature of from 25° to 30° C., soon becomes dry, and through friction is rubbed to fine powder, and by subsequent use of the handkerchief by the patient himself is distributed through the atmosphere. The same applies to soiled bedclothes, shirts, etc.; in fact, Dr. Cornet has been able to find bacilli in the dust of hospital wards, hotel rooms, private dwellings, and prison cells in which phthisical patients have expectorated on the floor or in the pocket-handkerchief, while they were never found in rooms in which the spittoon had invariably been used. The prophylactic procedures based upon these observations are self-evident. All hygienic rules fall in importance far beneath the one axiom that sputum should be deposited only in spittoons, whether it come from a known phthisical individual or not. This may be attained by showing the phthisical patients that it is a means to their own protection; showing them that they otherwise are continually infecting themselves by taking new germs into their lungs. Therefore all dwelling-rooms, hospital wards, prisons, etc., should be furnished with spittoons, and direction given that expectorated matter should only be deposited in them. In several of the Berlin hospitals this rule is already in operation, and in these hospitals dust collected from rooms occupied by tubercular cases has been found to be absolutely free from bacilli. Where, as is the case in most of our large hospitals, it is not impossible, the contents of the spittoons should be rendered harmless by steam, while the spittoons themselves should always contain a little water. In case of death from tuberculosis, the dwelling-rooms should be thoroughly disinfected. The walls may be rubbed down with freshly-baked bread,—a procedure proposed by Esmarch and based on scientific grounds. Bedding, carpets, etc., should likewise be well disinfected. So, also, in changing dwelling-places, even although they may not be known to have been occupied by tuberculous patients, they also should likewise be cleaned and purified. In hospitals, the separation of tuberculous patients from the other sick is desirable. Dr. Cornet believes that through the careful observation of these prophylactic principles, it will not be long before there will be a marked reduction in the spread of tuberculosis.

MORPHINE-POISONING.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—In the THERAPEUTIC GAZETTE of February is an interesting article on morphine-poisoning from the pen of T. H. Williams, M.D., in which he thinks the life of his patient was saved by electricity, faradic current. Three years ago this winter I had a severe case of morphine-poisoning. The patient was a lady aged about 30.

I tried all the usual remedies, but my patient kept sinking lower every hour. After about four hours hard work to keep her awake and maintain respiration, I sent for counsel and a small faradic battery that the druggist had. It was of the kind that the current is induced by simply turning a crank. The patient was very low when the doctor and battery arrived. We at once placed one cup over the phrenic nerve by the side of her neck, and the other over the diaphragm. The effect was almost magical. She revived at once, and in a very short time was able to say a few words and swallow a little stimulant without strangling. We cut off the current several times to note the effect. She would at once lapse into an unconscious condition.

A few turns of the battery would again revive her. All the medicine she got after the arrival of the battery was stimulants,—alcohol and aromatic spirits of ammonia. We kept her awake for a couple of hours with the battery very easily, when the effects of the morphine subsided. I am fully convinced that electricity saved her life, as it appears to have done with Dr. Williams's case.

I believe it is a most valuable agent in morphine-poisoning, and perhaps in some other causes of poisons. It is certainly an easy task to apply it.

Yours truly,

L. R. MARKLEY, M.D.

KIMBALL, NEB., February 23, 1889.

ADHATODA VASICA.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—Two contributions in your issue of March 15—the one a report of studies of the diphtheria bacillus, by Drs. Roux and Yversin; the other of Loewenthal's investigation of a remedy for cholera—point to a possible field of usefulness for the Indian drug *Adhatoda vasica*. This drug, of which a full report will appear in the forthcoming number of the *Druggists' Bulletin*, seems to me to be exceptionally worthy of investigation as to its power to destroy bacteria in the human system. From what is already known concerning it, it would appear to be perfectly harmless as applied to the higher orders of life, both animal and vegetable, but to increase in toxic power as applied to organisms successively lower in development. Thus, it has been found harmless to the dog in 15-gramme doses, but fatal to flies, fleas, mosquitoes, leeches, the pupæ of aquatic insects, and even to frogs. In the vegetable kingdom it is harmless as applied to the higher orders, but immediately fatal to various classes of submerged and floating aquatics, to mould, etc. Theoretical considerations certainly possess some degree of value, and in this case they point very strongly towards the probable value of this drug in sporadic diseases. I shall be greatly pleased to hear reports of its action in diphtheria. The most promising method of application would seem to be in connection with, or following the application of pepsin to the membranes, supplemented by its internal administration.

H. H. RUSBY, M.D.

Notes and Queries.

THE INFLUENCE OF BITTERS ON THE DIGESTION AND ASSIMILATION OF ALBUMINOID MATTERS.

Some experiments made by LEVEN* go to show that the ordinary bitters (extracts of cinchona, quassia amara, nux vomica, gentian, etc.) promote for a time digestion and assimilation; they are, however, soon followed by loss of appetite and dyspeptic troubles. According to Leven's interpretation, these medicaments excite the solar plexus and energize the activity of the gastric glands and muscular movements, but soon produce by exhaustion a diminution of this activity and an irritated and congested state of the gastric mucous membrane.

Several years ago Buchheim and Engel undertook a series of experiments to ascertain the influence of bitter substances on digestion, and concluded that "these substances have no action on the transformation of albumen into peptone, and they oppose fermentation." It is by virtue of this property, according to these physiologists, that bitters act so favorably in certain diseases of the digestive tube.

Since then, Tschelzeff, chief of Professor Botkin's clinic, has taken up anew this interesting question of the influence of bitters on digestion and on the nutrition of the animal organism in general.† His conclusions are "that extracts of the so-called pure bitters which are usually prescribed with the view of stimulating the secretion of gastric juice, and of aiding digestion, so far from having any beneficial action of that kind, are absolutely injurious, in that they retard the digestive functions." He experimented with extracts of aurantium, gentian, trifolium, absinthium, columba, cascarilla, and quassia, on (1) gastric digestion and the secretion of gastric juice; (2) pancreatic digestion and the secretion of pancreatic juice: (3) the secretion of bile; (4) fermentation; and (5) nitrogenous metamorphosis. He arrived at the conclusion that bitter extracts, even in small doses, interfere with artificial gastric digestion, and also with the gastric digestion of animals, but not to so great an extent. Large doses of bitter extracts diminish the secretion of gastric juice, although small doses effect a slight and transitory increase of it, the diges-

* "La Névrose," Paris, 1887, p. 34.

† *Bulletin Générale de Thérapeutique*, t. cxi. p. 90; *London Lancet*, 1886, Part I., p. 938.

tive power of the fluid being, however, in all cases diminished. Bitter extracts have no effect on the secretion of pancreatic fluid, but they nevertheless retard hypogastric digestion. The action of bitter extracts on the secretion of bile is various; extract of absinthium, extract of trifolium, and large doses of extract cetrarin slightly increase it, while extract of quassia, extract of columba, and small doses of extract cetrarin have no effect at all. Bitter extracts have no antifermentative effect, but rather hasten and promote fermentation, especially in large doses. The putrefaction of blood and urine is favored by the presence of pure bitters. With regard to the effect of bitters on nitrogenous metamorphoses, the Russian experimenter found that under their influence the quantity of waste nitrogen in the urine and fæces was increased; in other words, disassimilation was accelerated, while on the other hand assimilation was diminished.

It would seem from these experiments that bitters are of very questionable utility in the treatment of digestive disorders. It will not do, however, to adopt this conclusion without considerable reservation; experiments made in test-tubes in the laboratory and experiments on animals should not be allowed to outweigh the results of clinical observation; and, to quote the words of Lauder Brunton, "the evidence of clinical experience in regard to the utility of bitter extracts is so strong that it is plain, either that the experiments have been imperfectly conducted or that we must look to some other organ than the stomach for an explanation of the beneficial action of bitters in dyspepsia.*—*Boston Medical and Surgical Recorder*, February 28, 1889.

ANTIPYRIN IN SCIATICA.

Dr. Gabriel Covarrúbias, of Limache, reports a case in which he cured sciatica with antipyrin. The patient had been confined to his bed for two months, and was unable to move his left leg. The hip-joint was so painful that the gentlest examination with the fingers could scarcely be borne. The slightest pressure over the gluteal, sciatic, and trochanteric regions made the patient cry out with pain. Sleep had been impossible for some nights, and there was considerable wasting. The severity of the symptoms, coupled with the fact that there was slight rise of temperature every evening, led Dr. Covarrúbias to suspect the existence of an iliac abscess; an exploratory puncture was, therefore, made, with a negative result. Sciatica having then been diagnosed, injections or morphine in the affected part, anodyne applications, general anti-rheumatic treatment, salicylate of soda, iodide of potassium, sulphate of quinine, tincture of gelseminum, bromide of potassium, etc., all were tried without the least effect. Tonic treatment with iodide of iron, cod-liver oil, etc., proved equally futile. Antipyrin was then given in doses of 50 centigrammes, with an equal quantity of quinine, three times a day. The day after this treatment was begun the patient wished to get up; the pain had ceased, and he could move the affected limb quite freely. Ten days afterwards he left the hospital completely cured, and having gained considerably in weight.—*British Medical Journal*, March 16, 1889.

* "Pharmacology, Therapeutics, and Materia Medica." American edition, p. 365.

We clip the following from the college paper of the University of Michigan: "The faculty is shortly to lose one of its most valuable and widely known members. Mrs. Stowell, who has been connected with the botanical department, and who has contributed so largely to its success, has been appointed special microscopic artist of the botanical department at Washington, at a salary of two thousand dollars per year. While we join with our readers in extending congratulations to Mrs. Stowell on account of her new position, yet we voice the sentiment of the students in regretting her departure. No one has had work under her direction, but will testify to her inspiring influence in awakening a true interest in her students for the work in which they are engaged. The lady students will lose a warm friend, while the social circles of Ann Arbor will miss her exceedingly."

We desire to call the attention of American botanists to the above for the reason that heretofore structural botany has occupied but little, if any, of the attention of the botanical department at Washington. While Dr. Vasey is doing such thorough work in systematic botany, he is to be congratulated in having secured such assistance in what is called "the new botany." Mrs. Stowell has taught this subject to pharmacy students for twelve years, and the pages of the Therapeutic Gazette have been frequently illustrated with her drawings.

A NEW HYPNOTIC.

SIGNOR GUSTAVO POPPI, a medical student of Bologna, recently described to the Medico-Chirurgical Society of that city the effects of a new hypnotic, which he proposes to call "uralium." This substance is produced by the combination of chloral hydrate with urethan. From experiments on animals and on the human subject, Signor Poppi concludes that uralium induces sleep more quickly and more certainly than any other known hypnotic. He says that it causes no alteration of the blood-pressure, nor bad effects of any kind. Uralium has been given in various cases of heart-disease, in insanity, hysteria, and other nervous complaints, and always with the best results, even when other hypnotics had failed. Without throwing the least doubt on Signor Poppi's good faith, we may, perhaps, be allowed to hint that experienced practitioners will recognize in his enthusiastic account of his discovery the familiar trumpet-blast that heralds the first appearance of so many new remedies, "which have their day and cease to be," or which, at any rate, soon lose their title to therapeutic infallibility.—*British Medical Journal*, March 16, 1889.

RESECTION OF A PORTION OF THE ILEUM.

DR. FREDRICO RUBIO, of Madrid, recently communicated to the Spanish Royal Academy of Medicine an interesting case in which he performed successfully a somewhat extensive resection of the gut in the wards of the Instituto de Terapéutica Operatoria of Madrid. The patient was a woman, 32 years of age, who, after eating a quantity of cooked vegetables, was seized with violent abdominal pain, a swelling appearing at the same time in the right groin. Vomiting and constipation followed. Subsequently the tumor in the groin became inflamed and opened in two places,—viz., at the external inguinal ring and at the lower part of the right labium. From these fistulous openings fæces kept continually escaping, rendering the patient's condition most deplorable. Attempts were made during many months to get these openings to close up, but, although temporary improvement followed some of the means used, it ultimately became evident that unless some radical operation was resorted to the patient must necessarily succumb. Having given purgatives and enemata to empty the bowels, and a disinfecting bath to cleanse the surface, Dr. Rubio performed laparotomy, making a small incision in the spot usually selected for the ligature of the external iliac. This brought into view the cæcum with the vermiform appendix. He then hooked up the coils of the ileum one after another; the third of these presented an opening with fungiform edges three centimetres and a half in length by two centimetres and a half in breadth, and surrounded by a very unhealthy-looking area,—which, indeed, occupied the whole circumference of the gut. Under these circumstances, it was felt that any attempt to close the opening would assuredly end in failure, and that the only alternative was to excise a portion of the gut. About eight centimetres were consequently excised, together with a V-shaped piece of the mesentery; catgut sutures were applied, and the patient made a good recovery, normal defecation taking place on the second day after the operation.—*The Lancet*, March 2, 1889.

THE PHARMACOLOGICAL PROPERTIES OF THE MUSCARI COMOSUM.

The *Muscari comosum*, Mill., or *Hyacinthus cosmosus*, L., is a tunicated bulb with blue and violet flowers, and is very common in flower-gardens. All the parts of the plant—the bulb, stem, leaves, and flowers—contain a mucilaginous juice, with an acrid and bitter taste. Boiling the bulbs deprives them of their bitterness, and in this form they have been used as an article of food. According to DR. CURCI (*Répertoire de Pharmacie*, March 10, 1889), when a watery decoction of the bulbs is treated with boiling alcohol, the mucilage is precipitated, and the bitter part dissolved, and may be separated, in cooling, from the alcoholic solution. The deposit treated several times with boiling absolute alcohol acquires a gummy aspect and a bitter, acrid taste; it is insoluble in cold water, but soluble in hot water. This substance appears to be analogous to quillaiaic acid described by Kobert, and has received the name of comosic acid by the author, who has made a number of experiments as to its physiological action. Dr. Curci does not claim to have obtained this substance in a pure condition, and the effects of the doses employed cannot, therefore, be regarded as absolute. He concludes that the active principle of *Muscari comosum* is an acid, probably analogous to quillaiaic and polygalic acids. It has a physiological action similar to that of saponine, to which pharmacological group it apparently belongs. It possesses the power of local irritation, although but slow in

its action, and when introduced in the blood it paralyzes the organs of circulation through action on the vaso-motor system. Vascular paralysis precedes the paralysis of the heart, as is shown by production of the œdema of the lungs and other viscera in mammals, and an empty condition of the heart of batracians. From the therapeutic point of view the author believes that the decoction of *Muscari comosum* may be employed as an expectorant in catarrhal affections of the respiratory passages in the same manner as ipecac, squills, etc., and he proposes to test its therapeutic action in these conditions, and promises to subsequently publish his results.

ULCERATION OF THE TONGUE AND MOUTH CURED BY OPIUM.

At the meeting of the Medical Society of London, held February 25, 1889, MR. SHIELD showed a case of ulceration of the tongue and mouth cured by opium (*Lancet*, March 2, 1889). A carpenter, aged 56, had suffered for three years from obstinate ulceration of the sides of the tongue and gums. The affection varied in severity from time to time, but was always a serious trouble, and sometimes prevented him from eating or speaking. No cause was attributed for the occurrence of this malady. He had been a temperate man, and had never suffered from syphilis, or been employed in glass-blowing, or was immoderately fond of pipe-smoking. He had, however, been living in a poor way, and his general health had deteriorated greatly. A variety of treatment had been adopted without relief. On examination, the man looked pain-racked, worn, and haggard. There were marked fætor and salivation. The left side of the tongue was superficially ulcerated in several places, the ulcers being covered with débris of food and superficial slough. The right side of the tongue was less affected. The gums were ulcerated round the teeth and the posterior molars were loose. The mucous membrane was healthy, excepting in the situation of the ulcers. The glands beneath the jaw were enlarged. The ulcers were acutely painful, and the man had to subsist upon fluid nutriment, which he swallowed with difficulty. For three weeks the tongue was treated without any benefit. The remedies employed were small doses of blue pill and colchicum, potassium iodide, and tonics; locally, solutions of cocaine and antiseptic mouth-washes. A solution of chromic acid seemed only to aggravate the malady. After three weeks the use of opium was commenced; an opium pill of 1 grain administered thrice daily, and a simple carbolic mouth-wash used locally. In three days the pain was much less, and the ulcers were decidedly more healthy in appearance. In three weeks the ulcers had entirely healed, the only sign to indicate their previous presence being the glazed appearance of the sides of the tongue and the loose teeth. The man, being able to eat and drink freely, had wonderfully improved in appearance. The use of opium in this case was suggested by a paper read by Mr. George Pollock and published in the *British Medical Journal* of April 26, 1884. There he narrated a case very similar to the above, though much more severe, where the effects of opium were most beneficial. His patient had undergone a variety of treatment, including the application of nitric acid, by an eminent authority. The action of opium was difficult to explain in such cases; its undoubted efficacy in painful and sloughing ulcers was perhaps hardly enough appreciated in the present day.

THE NOCTURNAL INCONTINENCE OF URINE IN CHILDREN.

In an interesting paper published in the *Archives of Pediatrics*, April, 1889, DR. SIMON BARUCH highly recommends the use of belladonna, or atropine, for the treatment of nocturnal incontinence of urine. His practice is to order a sufficient quantity of atropine in the afternoon at four o'clock and at bedtime to insure dilatation of the pupil: $\frac{1}{64}$ of a grain to children from 6 to 10, double the quantity to children up to 14, administered at these hours, usually suffices. If the pupils are widely dilated when the next dose is due it is omitted. The essential point of this treatment is that the pupil must be dilated during the sleeping hours, showing that the system is under the influence of atropine. Dr. Baruch's results would appear to show that this treatment will be followed by the most successful results.

THE ACTION OF ANTIPYRIN ON THE CONTRACTILITY OF THE UTERUS.

Antipyrin has been recommended by several authorities as an analgesic during labor. It has recently been investigated by PROFESSOR PINZANI in this connection, who publishes the following as the results of his studies in the *Internationale Klinische Rund-*

schau for March 3, 1889. Antipyrin only to a certain extent diminishes the severity of the labor pains, and accomplishes this by reducing the degree of contraction of the uterus. This result appears about two hours after the administration of the antipyrin hypodermically, while four and five hours elapse before any effect is evident when it is given by the mouth. Diarrhœa is caused in suckling children when antipyrin is given to the mother during the puerperal state. The doses which Professor Pinzani employed in his experiments were 45 grains, 30 grains, and 15 grains daily, and in some cases only 15 grains every other day. The estimation of the degree of the contractility of the uterus, before and after the administration of the remedy, was accomplished by the application of the hand to the abdominal walls, or by the introduction of a manometer, consisting of a rubber ball inserted into the uterine cavity.

HEADACHE AND ITS RELATION TO THE RETENTION OF URIC ACID.

The etiology of many forms of headache is still quite obscure. Dr. A. Haig maintains that one variety of periodic headache is directly due to the retention of uric acid in the system. The usual sequence of events, according to him, is as follows:

There is a time (say seven to ten days) of good general health, active nutrition, and bodily activity, with plus formation of uric acid and urea, and concomitant rise in acidity. As acidity rises, uric acid comes to be retained, and at the end of four or five days several grains may be regarded as stored up in the liver and spleen. Then come dyspepsia, gastro-intestinal catarrh, and hepatic congestion (and Dr. Haig is not by any means certain that this hepatic congestion and gastro-intestinal trouble may not be the direct result of the accumulation of uric acid in the liver and spleen). These quickly result in general diminution of absorption and nutritive changes, with lessened formation of uric acid and urea and a fall in acidity; and lastly, as the result of this falling acidity, there comes a rush of the stored uric acid into the blood and the headache begins.

Such a sequence may be seen to some extent in the figure that accompanies his paper on headache (*Transactions*, 1887), for there the urea drops from five hundred and sixty-one grains to three hundred and sixty-three grains in the four days that immediately precede the headache. Although acidity was not estimated in this instance, there can be no doubt that it followed and shared in the fall of urea to a large extent. Such a sequence explains the periodicity of this kind of headache, and the way in which it comes to occur every week or ten days for many years, varying only in degree with the corresponding variations in nutrition. It is also evident that any causes which affect digestion will influence the attack in one of the above ways; while all causes of debility, by weakening the nerve-centre on which the uric acid acts, will render it more sensitive (the reverse of the action of bromides) and the attacks more frequent. A knowledge of these facts gives him almost complete power either to cause or cure this headache in himself and other sufferers.

The good effects of salicylic acid, and the salicylates generally, in this variety of headache, are due to the circumstance that they facilitate the excretion of uric acid, and thus prevent the retention of excessive amounts within the body.—*Medical Record*, March 30, 1889.

THE HYPODERMIC EMPLOYMENT OF LACTATE OF QUININE.

The superiority of the lactate of quinine for hypodermic injection is well recognized on account of its great solubility,—one part in four of water,—and the large percentage of quinine which it contains (seventy-eight per cent.). Nevertheless, numerous complaints have appeared as to the unfavorable results which have followed its employment, especially as to the failure to attain the high degree of solubility as stated above. Pierre Vigier, in the *Gazette Hebdomadaire de Médecine et de Chirurgie*, March 15, 1889, states that the solubility of the well-crystallized salt of quinine is only one part in ten of water. This decrease in solubility may be avoided, according to the author, by strict attention to certain details in the method of preparation of this salt. Lactate of quinine may be made either by double decomposition, or by precipitation of the sulphate of quinine and its solution in lactic acid; the latter process is the one which the author prefers. The following is the method of preparation:

21.65 parts of the sulphate of quinine should be dissolved in 400 parts of water with 25 parts of sulphuric acid, diluted to one-tenth; then precipitated by an excess of ammonia. The quinine so precipitated should be rubbed up with sufficient lactic acid (about

5 parts, in water); and 100 parts of distilled water, 180° C., to clear up the solution. It should then be placed on a water-bath and reduced to 100 parts by heat. When cooled, it should be filtered, and may be preserved in a vial. This solution will contain exactly one part of lactate of quinine for every five parts of solution.

ARSENICAL POISONING FROM GREEN CANDLES.

Attention has been called in a daily contemporary to a novel source of atmospheric contamination with the fumes of the poisonous metals. At a children's party last Christmas a number of the little guests, as well as several of the adults, were seized with curious and inexplicable symptoms, which could not be traced to the ingestion of any particular food or liquid of which they had partaken. Attention was then drawn to the candles on the Christmas-tree, many of which were green, and these, when submitted to analysis by the county analyst, proved to contain Scheele's green, the red candles, moreover, being colored with vermilion. As we are not told what the symptoms were, it is not possible to formulate a definite opinion as to the likelihood of their being due to the incriminated candles, but the warning is opportune on general principles, and our sanitary authorities will do well to exercise a little surveillance in this direction.—*Medical Press and Circular*, March 13, 1889.

RELATION BETWEEN CHLOROSIS AND MENSTRUATION.

At the meeting of the Obstetrical Society of London, held March 6, 1889, DR. W. STEPHENSON, Professor of Midwifery, University of Aberdeen, read a paper on the above subject, which consisted of an analysis of two hundred and thirty-two cases (*Lancet*, March 23, 1889). The author observed that in the rapid progress of uterine specialism, chlorosis, in its relation to menstruation, had been too much neglected by the gynæcologist. The two hundred and thirty-two cases were divided into two groups,—1, where the illness was primary and occurred before the twenty-third year, comprising one hundred and eighty-three cases; 2, where the attacks were of the nature of relapses after a period of good health (forty-nine cases). Chlorosis was regarded as due to a constitutional state; but the diathesis was not necessarily associated with an impairment of the development of the body, and was not, to any marked degree, connected with defective health previously to the onset of the disease. The influence of the chlorotic constitution on menstruation before chlorosis sets in was first discussed. Tables were given to show that the tendency of the chlorotic diathesis is to accelerate the age at which menstruation first appears, and that chlorosis by itself is not a cause of retarded appearance of the catamenia. At the same time, in one-half of the cases, the functional activity is defective, and is chiefly characterized by lengthening and irregularity of the intervals and scantiness in the amount of the flow. The author's statistics were against the opinion that there is a menorrhagic form of chlorosis. In 96.6 per cent. the effect was to diminish the activity of the function, the remaining fraction being complicated with ovarian irritation. In 58.7 per cent. menstruation became scanty and irregular, and in many cases painful, while in 37.8 per cent. there was amenorrhœa for various periods. A table was given to show that there are two marked chlorotic periods,—the one, of primary attacks, from the age of 14 to 21; the other, of secondary attacks, from 24 to 31. The number of cases of the disease presents a regular curve, beginning at the age of 14, and rising steadily to a maximum between 18 and 19, then rapidly falling, to disappear altogether at 22. The tendency to secondary attacks manifests itself first at the age of 24, rises to a maximum between 26 and 28, to again disappear at 32. That there may be a third period is probable, as two cases were recorded at the ages of 39 and 41. This law applies to attacks of the disease with distinct intervals of good health between, as distinguished from the simple relapses, after periods of imperfect convalescence, frequently met with after a primary attack. The curve of menstrual age, compared with the curve of the onset of chlorosis, does not bear out the opinion that "foremost in etiological importance is the period of the first appearance of the catamenia." The fact of a periodicity in the attacks is also against it. The cause of this periodicity was considered, and the general conclusion arrived at is that imperfect evolution of menstruation, as evidenced by scantiness of the flow and irregularity of the periods, is as regular a feature of chlorosis as the imperfect evolution of the red corpuscles of the blood. These constants were independent one of the other, though a close relationship existed between them whereby the reproduc-

tion and development of the red corpuscles of the blood were governed by, or form part of, the menstrual cycle; while both were influenced by a greater rhythmic action which determines the time and activity of development, growth, and reproduction.

AN EARLY SIGN OF ENDOCARDITIS.

Every one who has watched a case of acute articular rheumatism and has noted the appearance, during its course, of valvular lesions of the heart, must have wished for some means whereby the intercurrence of endocarditis might be detected at an early period. Usually the first sign of this complication is a murmur at one or other of the cardiac orifices, an indication that the valves are already involved in the inflammatory process.

Dr. Duclos, of Tours, writing in the *Revue Générale de Clinique et de Thérapeutique*, January 17, 1889, records a fact of his experience, in regard to commencing endocarditis, which may possibly be of value as an aid in the early recognition of this affection. While in charge of a military hospital he chanced to have a large number of young soldiers suffering from acute articular rheumatism under his care. One day, while listening to the heart-sounds of one of these patients, his finger being at the same time on the radial pulse, he was struck with the want of synchronism between the ventricular contraction and the pulsation at the wrist, the latter being delayed about two-thirds of a second. The following day a systolic apex murmur was heard. Thinking that this retardation of the radial pulse might have some significance in connection with the subsequent development of endocarditis, he took pains to note its occurrence in other cases, and found that it was followed by a murmur at the end of from twenty-four to thirty-six hours in every instance. These observations were extended over a period of several years, and were confirmed in a number of cases by Professors Parrot and Potain.

The author has no conclusive theory to offer in explanation of this phenomenon, but he thinks that it is probably due to a weakening of the muscular fibres subjacent to the endocardium. He compares it to the weakened respiratory murmur frequently observed at the beginning of a pleurisy a few hours before a friction-sound is developed or effusion takes place. It would be interesting to learn whether this want of synchronism is present in the beginning of endocarditis arising in the course of other diseases, but the author has few observations bearing on this point to record. He has noted it, however, in two cases of typhoid fever and in three of erysipelas, in which endocarditis subsequently developed.

Dr. Duclos draws some practical conclusions, in regard to treatment, based upon the early recognition of the affection, and he believes that he has succeeded in arresting the disease, in certain cases, before irreparable injury had resulted. His plan is to apply immediately a large fly-blister over the præcordial region, or, in default of this, a mustard-plaster, dry cups, or leeches. He increases also the dose of the remedy that is being at the same time given for the rheumatism. Of course, a strict enforcement of recumbency is also indicated.

When we consider the importance of an early diagnosis of endocarditis, and the possibility of arresting the disease if detected in its incipiency, this alleged premonitory symptom of the affection is worth testing in order to determine the amount of practical utility that it may possess.—*Medical Record*, March 30, 1889.

THE THERAPEUTIC PROPERTIES OF HYSTERIONICA BAYLAHUEN.

Dr. G. Baillé reports in the *Bulletin Général de Thérapeutique*, February 28, 1889, the following conclusions from experiments made as to the therapeutic properties of *Hysterionica Baylahuen*. The infusion of this drug is an excellent remedy in diarrhœa, and has produced good results in both acute and chronic dysentery. It has likewise proved successful in diarrhœa of phthisical cases, and in the diarrhœa of various cachexias and cancer. The infusion may likewise be used during the employment of remedies, such as mercury, which tend to the production of diarrhœa. Given in alcoholic tincture, it does not produce constipation.

SOME EXPERIENCES WITH SULPHONAL.

Until quite recently the reports of the results of the use of sulphonal, the new hypnotic, have been decidedly in its favor. Of late, however, some accounts have come from abroad which indicate that it is not so harmless as was at first

asserted. This drug seems to be of so much value that exact knowledge of its effects is quite desirable. Its high price has probably prevented a very extensive use of it, and reports of its effects have so far been somewhat meagre.

Dr. C. M. Rexford's experience with sulphonal seems to show that it is about as well adapted to one class of cases as another, and that the only reason for expecting a failure in any given case is the presence of extreme pain (*Medical Record*, March 30, 1889).

The first patient upon whom its effects were observed was a woman who, from long-continued nervous strain, fell into a state of complete prostration, attended by intense cerebral congestion, non-inflammatory in character, with violent and constant headache, hallucinations, and finally delirium of a low type, lasting for months. This condition could only be controlled by opiates, and upon their withdrawal, which improvement made possible, it was succeeded by sleeplessness and much pain in the head. At this time sulphonal was put on the market. The first dose gave the patient a night of natural sleep, and the head felt much better the next day. No more perfect result could be desired than the drug produced in this case. A dose of 20 to 30 grains always produces sleep, relieves the distress in the head, and leaves no bad effect whatever. It has only been necessary to use the drug occasionally, and nothing like a habit has been formed.

The medicine was employed in a recent case of pneumonia. The attack was not severe; but the patient, a feeble woman, past middle life, was an extremely nervous and difficult one. Great depression of the nervous system came on, with persistent sleeplessness, which proved wholly refractory to ordinary sedatives. A dose of 10 grains of sulphonal was given. No effect, besides greater restlessness, was produced for four hours. Then profound sleep ensued, which persisted for twenty-four hours. During this time it was difficult to rouse her enough to take nourishment. No other ill result followed, nor did the insomnia return. The depth of the stupor produced by the small dose employed was such as to make the result of a larger dose seem rather doubtful. This patient has a weak heart, sometimes intermitting, but it seemed not to be affected by the drug.

Another case was one suffering from chronic metritis. This patient, when first seen, was extremely debilitated by absence of appetite and want of sleep. 15 grains of sulphonal at bedtime acted very favorably for a time, but finally failed to induce sleep, and only caused great restlessness instead. Finally, a second dose of 15 grains was given, four hours after the first. The patient then fell asleep. In the morning she was unable to rise. She complained of giddiness, of being unable to hold the head up, and could not stand or walk without assistance. There was vomiting, and the stomach refused to retain food for many hours. When permitted she slept a troubled, uneasy sleep for the whole day. It was not till the end of three days that she felt herself again. This patient also has a very weak heart, though there is no organic lesion. She is frequently faint, or is obliged to lie down because the heart acts badly. While under the influence of the medicine, as related, the heart-symptoms seemed to be made somewhat worse, but not notably so.

In the considerable number of other cases in which this remedy has been employed it has acted, in the main, favorably. These have been cases of nervous insomnia, and they have all yielded without any difficulty and with no untoward result.

The experience of the writer seems to indicate that sulphonal is a valuable medicine, but that it has its limitations. It is easy to take, it does not often irritate the stomach or produce ill effects. But it may fail to act as expected, and in some instances it may produce extremely disagreeable results. The dose which was at first recommended, of 30 to 60 grains, is too large to commence with. It is unsafe to give more than 10 grains as an initial dose, and 15 grains will prove a sufficient dose in the majority of cases.

ANTIPYRIN IN LARYNGISMUS STRIDULUS.

Dr. Montague Perceval, writing in the *Lancet* of November 17, 1888, recommends very highly the use of antipyrin in laryngismus stridulus. He reports the case of a child, 18 months of age, to whom he gave the drug in doses of 2 grains every hour for a few hours until the child fell asleep, and then in the same dose every two hours. The following day the little patient was well. The author used the remedy in twenty-three other cases with equally favorable results, except that in one case it was necessary to increase the dose to 5 grains before the paroxysms ceased.—*Medical Record*, March 30, 1889.